Vol. 984 Number 4

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

PATENTS

July 24, 1979

U.S.
DEPARTMENT
OF COMMERCE

Patent
and
Trademark
Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT and TRADEMARK OFFICE

July 24, 1979 Volume 984 Number 4

CONTENTS

	Page
Patent and Trademark Notices	
Patent Cooperation Treaty (PCT) Information	984 OG 26
Trademark Rules of Practice	984 OG 26
Regulations for the Use of the Facilities of the Patent and Trademark Office	984 OG 26
Registration to Practice	984 OG 27
Patent and Trademark Office Board of Appeals	984 OG 29
Patent Suits	984 OG 29
Reissue Applications Filed	984 OG 31
Patent Notices	
Certificates of Correction for the Week of July 24, 1979	984 OG 32
Disclaimers	984 OG 32
Dedications	984 OG 32
National Technical Information Service	984 OG 32
Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries	984 OG 34
Condition of Patent Applications	984 OG 35
Reissue Patents Granted (30,049)	791
Plant Patents Granted (4,441)	795
Patents Granted	
General and Mechanical (4,161,792)	797
Chemical (4,162,142)	915
Electrical (4,162,367)	975
Design Patents Granted (252,416)	1039
Index of Patentees	PI 1
Indices of Reissues, Plants and Designs	PI 27
Classification of	
Patents (Including Reissues)	PI 29
Designs and Plants	PI 31
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 32
Designs and Plants	PI 33
Change of Address Form and Subscription Order Form	Back Page

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT, including the amounts of the fees thereunder and the States that may be designated in international applications, consult the notice entitled "Update of information concerning the Patent Cooperation Treaty" appearing in the OFFICIAL GAZETTE of July 3, 1979.

Effective August 1, 1979 the international fees are increased to the following amounts:

Basic fee under PCT Rule 15.1(i) for an international application containing 30 sheets or less	$190.00
Supplemental fee to the Basic fee for each page of an international application in excess of 30 sheets	3.50
Designation fee under PCT Rule 15.1(ii)	45.00

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

July 3, 1979.

Trademark Rules of Practice

Revision 1 to the ninth edition of the Trademark Rules of Practice, dated May, 1979, is now available, and has been mailed to current subscribers.

The Rules are in looseleaf form so as to accommodate revisions. New subscriptions may be ordered from:

Superintendent of Documents
United States Government Printing Office
Washington, D.C. 20402

The charge is $10.00 for domestic mailing and $12.50 for foreign mailing.

The Rules booklet is available only by subscription. When revisions are issued, they are a part of the subscription and are mailed automatically. Revisions are announced in the OFFICIAL GAZETTE of the Patent and Trademark Office.

SIDNEY A. DIAMOND,
Assistant Commissioner for Trademarks.

June 15, 1979.

Regulations for the Use of the Facilities of the Patent and Trademark Office

Revision of Regulations

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Notice.

SUMMARY: The Patent and Trademark Office gives notice of a revision of its "Regulations for the Public Use of Records in the Public Search Room for Patents of the Patent and Trademark Office," published in the Federal Register of July 14, 1976, 41 FR 29009. The regulations published in the Federal Register of July 14, 1976, are limited to the use of the Public Search Room for Patents. The revision is intended to allow public use of other Patent and Trademark Office record facilities with minimum risk to the security of Patent and Trademark Office personnel and government property.

EFFECTIVE DATE: June 26, 1979.

FOR FURTHER INFORMATION CONTACT: Bradford R. Huther, Deputy Assistant Commissioner for Administration, Patent and Trademark Office, Washington, D.C. 20231, 703–557–2290.

SUPPLEMENTARY INFORMATION: This revision is an extension of the present regulations, published in the Federal Register of July 14, 1976, 41 FR 29009, to allow public use of Patent Examining Group Facilities and the Scientific Library under conditions which are as nearly as possible the same as those which apply to the Public Search Room for Patents.

All persons seeking use of the Public Search Room for Patents and/or the Patent Examining Group Facilities must obtain a User Pass. The guards at the entrances to the Public Search Room for Patents can direct prospective users to the pass issuance desk. User Passes will be issued to persons not under prohibition from using the facilities who agree to abide by the regulations of the Public Search Room for Patents and the Patent Examining Group Facilities.

The use of the Group facilities for search purposes by members of the public is strictly limited to the search of materials not available in the Public Search Room for Patents or the Scientific Library and when it does not conflict with the regular business of Patent and Trademark personnel and only between the hours of 8:45 a.m. and 4:45 p.m. on regular business days.

The Public Search Room for Patents is open 8:00 a.m.–8:00 p.m., Monday through Friday except on legal holidays. The hours of the Record Room are 8:00 a.m.–5:00 p.m. on the days the Public Search Room for Patents is open.

The revised regulations appear below:

REGULATIONS

Regulations for members of the public using the facilities of the U.S. Patent and Trademark Office, including but not limited to the Public Search Room for Patents.

The Public Search Room for Patents is defined as that area comprising the foyers of the lobbies of Buildings 3 and 4 of Crystal Plaza; the offices; Microfilm Center; restrooms and telephone areas off these foyers; the stacks; Record Room public reception area; study and copier areas between the foyers; and the Mezzanine.

The facilities of the Patent Examining Groups are defined as those areas in Buildings 3, 34 and 4 of Crystal Plaza designating Examining Groups.

With the respect to the Group Facilities, authorized personnel under these Regulations, include Supervisory Patent Examiners and Examining Group Directors.

The Scientific Library is located on the second floor of Building 34 of Crystal Plaza.

To maintain and protect the patents and related records located in the Public Search Room for Patents and the Patent Examining Group Facilities, it is necessary to establish and to enforce certain rules and regulations pertaining to the use thereof. Under applicable statutes and regulations, including 40 U.S.C. 486(c); 41 CFR Subpart 101–20.3; and appropriate Sections of Department Organization Orders 30–3A and 30–3B of the Department of Commerce, the regulations appearing below are established for those using the facilities of the Patent and Trademark Office.

These regulations supersede all previous regulations on the subject.

1. All persons using the facilities of the Patent and Trademark Office are subject to the regulations governing conduct on property under the charge and control of the General Services Administration which appear in 41 CFR Subpart 101–20.3 [41 CFR §§ 101–20.300 through 101–20.314].
2. All posted Official Notices are to be complied with.
3. Smoking is not permitted except in designated areas.
4. No food or beverages in any form are to be consumed except in designated areas.
5. Loud talking, use of radios, and any other form of activity which may disturb other members of the public and/or Patent and Trademark Office personnel are forbidden.
6. Children brought into the Patent and Trademark Office must not be allowed to disturb others.
7. Users of the facilities may not give the Patent and Trademark Office as a mailing address or otherwise suggest that mail may be received at the Patent and Trademark Office; nor may correspondence be conducted on official Patent and Trademark Office stationery.

8. Messages shall not be affixed to walls, desks, phone booths, or other public property, except designated message boards.
9. Patent records and any other property of the Patent and Trademark Office shall not be removed from their normal location without permission from an authorized official; nor shall such records or property be mutilated. Authorization will not be given to remove from any Group Facility, U.S. patents or any other material readily available through the Scientific Library.
10. The use of equipment such as reproducing machines, typewriters and photographic equipment is prohibited without prior permission from an authorized official. Relative to the Public Search Room, the use of dictation equipment is prohibited except in designated areas. Whenever permission is obtained, the use of such equipment must not conflict with Regulation 5.
11. In the Public Search Room for Patents, library trucks or carts are to be used for transporting bundles only. The trucks or carts are not to be used for storage while making searches.
12. In the Public Search Room for Patents, patents temporarily removed from bundles for any purpose must be returned to the proper place in the appropriate bundle.
13. In the Public Search Room for Patents, all bundles of patents must be promptly and properly replaced in the stacks by the user.
14. The reserving of seats and/or working areas is prohibited.
15. Users of the Public Search Room for Patents are not permitted to use Patent and Trademark Office facilities beyond the Public Search Room for Patents after 5:00 p.m.
16. The front portion of the Public Search Room for Patents, i.e., that portion facing Crystal Plaza Drive and having a high ceiling shall not be occupied by users after 6:00 p.m.
17. A valid User Pass must be worn and visible at all times when Patent and Trademark Office facilities are being used. In addition, all persons holding User Passes must register with the designated representative in each Examining Group where they search and must sign a log (sign-in, sign-out sheet) indicating time-in, time-out, name, User Pass number, class(es) and subclass(es) users after 6:00 p.m.
18. User Passes are nontransferable and must be surrendered to authorized Patent and Trademark personnel upon request for cause.
19. Packages, briefcases or other personal effects brought into the Public Search Room for Patents or the Group Facilities are subject to search by authorized Patent and Trademark Office personnel upon request.
20. All packages, briefcases or other personal effects brought into the Group Search Rooms must be removed when leaving the Group Search Room areas.
21. Patents and other documents must not be removed from the Group patent shoes for any reason other than for cursory study thereof while kept in close proximity with the shoe and must not be moved out of their normal sequence.
22. All patent shoes must be promptly replaced in their proper location in the shoe cases.
23. All textbooks, journals and the like must be returned to their proper location.
24. All persons using the facilities of the Patent and Trademark Office are to refrain from engaging in any conduct which (1) is criminal in nature or (2) which causes or appears to cause an employee of the Patent and Trademark Office to violate the conflicts of interest regulations of the Department of Commerce [15 CFR §§ 0.735–1 through 0.735–41].
25. All verbal requests for compliance with these regulations or other posted Patent and Trademark Office Notices pertaining to activity in the Public Search Room for Patents and the Group Facilities, when made by authorized Patent and Trademark Office personnel, must be promptly complied with.

These regulations will be enforced in accordance with the Procedures for Enforcement published in the Federal Register of May 17, 1978, 43 FR 21345 (970 O.G. 114, published May 30, 1978).

Persons violating these regulations may be denied the use of the facilities in the Public Search Room for Patents and the Patent Examining Group Facilities and may further be subjected to prosecution under the Criminal Code. Additionally, the name of any person violating these regulations who is registered to practice before the Patent and Trademark Office may be forwarded to the Solicitor for appropriate action under 37 CFR 1.348.

These Regulations have been instituted in order to maintain high quality and completeness of patent files and to provide an orderly environment for exploring, or studying in depth, the wealth of scientific and technological information contained in United States Patents. Although the Regulations may cause some inconvenience, the understanding and cooperation of users will insure that, for future users, the knowledge contained in United States Patents will be available in an environment conducive to study in the Public Search Room for Patents and the Patent Examining Group Facilities.

DONALD W. BANNER,
Commissioner of Patents and Trademarks.

June 20, 1979.

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent and Trademark Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents and Trademarks on or before August 24, 1979.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

July 2, 1979.

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Patent and Trademark Office Board of Appeals

In accordance with the provisions of 35 U.S.C. 7, vacancies on the Board of Appeals are filled by appointment of examiners-in-chief under the classified civil service. These appointments will be made at a salary of $47,500 per annum maximum. There will be two positions to be filled through this announcement.

Persons interested in being considered for the vacancies are invited to submit their applications to the address given below, on or before August 17, 1979. The duties, qualifications, and factors which will be considered in evaluating the candidates are described below.

Duties: Serves as a member of the Board of Appeals of the Patent and Trademark Office. As an examiner-in-chief, participates in its appellate and administrative responsibilities and exercises independent judgment on all matters before him or her on appeal subject to administrative and policy direction of the Commissioner. Appeals filed in accordance with 35 U.S.C. 134 and 37 CFR 1.191 through 1.198 of the Rules of Practice of the United States Patent and Trademark Office in Patent Cases involve complex legal and technical questions. The Board of Appeals has the sole power to hear and adjudicate appeals from decisions of the Primary Examiners as to patentability in applications for patent and for reissue of patents. Final decisions of the Board, if unfavorable to an applicant, may be appealed to the United States Court of Customs and Patent Appeals or civil action may be taken in accordance with 35 U.S.C. 145.

Qualifications: Candidates must possess (1) a minimum of five years of patent experience of which at least two years involved the exercise of independent judgment in a responsible position as typified by the exercise of Full Signatory Authority as a Patent Examiner or by comparable experience in some other position inside or outside the Patent and Trademark Office; (2) a law degree or be a member in good standing of the bar in any state, D.C.,Puerto Rico, or any territorial court under the constitution; (3) a high degree of demonstrated competence in mechanical technology; (4) ability to write clearly and logically; (5) comprehensive experience in patent prosecution, examination or administration which demonstrates a thorough knowledge and application of patent laws and rules of practice.

Factors Which Will be Considered in Evaluating Qualified Candidates: Candidates will be evaluated on the basis of education, training, awards and supervisory appraisals. *Note:* The qualifications of the proposed incumbent will have to be reviewed and approved by the Department of Commerce before an appointment can be made effective.

Employees of the Department of Commerce may apply by submitting a completed Merit Promotion Interest Statement, Form CD 261, and a completed SF 171, Personal Qualifications Statement, if one is not already on file at the address given below. Persons who are not employees of the Department of Commerce should submit a completed SF 171. Copies of Form SF 171 may be obtained at local post offices. The completed forms should be sent to:

U.S. Patent and Trademark Office
Office of Personnel
Building 2, Room 9C05
Crystal Plaza
Arlington, Virginia 22202

Questions concerning this notice should be directed to Ms. Donna Waters, Office of Personnel, Room 2-9C05, Telephone (703) 557-3631.

July 1979.

LUTRELLE F. PARKER,
Acting Commissioner of Patents and Trademarks.

Patent Suits

Notices under 35 U.S.C. 290: Patent Act of 1952

2,876,985, Fischer & Porter Company, ROTARY VALVES FOR LABORATORY GLASSWARE AND THE LIKE, **filed** Mar. 20, 1975, D.C.N.J. (Camden), Doc. C75-0472, *Fischer & Porter Company* v. *Lurex Manufacturing Co. Inc.* Order dismissed without costs and without prejudice to the right, upon good cause shown within 60 days, to reopen action if settlement not consummated, filed Mar. 18, 1977.

2,906,875, Edward T. Molinaro and Anthony P. Catanzaro, STATION SAMPLING RADIO, **filed** Mar. 27, 1979, D.C. Del. (Wilmington), Doc. 79-159, *Anthony P. Catanzaro* v. *Motorola, Inc.*

3,009,149, Ramsey McDonald, AUTOMATIC DIAL RADIO TELEPHONE SYSTEM, **filed** Apr. 17, 1979, D.C., N.D. Tex. (Dallas), Doc. CA3-79-0478-H, *Ramsey McDonald* v. *Communications Industries, Inc.*

3,102,374, Multifold-International, Inc., PACKING MACHINE, **filed** Mar. 27, 1979, D.C., S.D. Ohio (Cincinnati), Doc. C-1-79-193, *Multifold-International, Inc.* v. *Jagenberg-Werke Aktiengesellschaft.*

3,172,571, American Can Company, COLLAPSIBLE DISPENSING TUBE; **3,260,410,** same, COLLAPSIBLE CONTAINER STRUCTURE; **3,260,411,** same, COLLAPSIBLE CONTAINER STRUCTURE; **3,295,725,** same, COLLAPSIBLE DISPENSING CONTAINER WITH AN IMPERMEABLE BARRIER BOTH IN ITS LAMINATED WALL AND IN ITS HEADPIECE; **3,347,419,** same, COLLAPSIBLE DISPENSING TUBE, **filed** Mar. 2, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c831, *American Can Company* v. *Dart Industries, Inc.*

3,185,364, Ampex Corporation, DRIVE SYSTEM FOR TAPE TRANSPORT SYSTEM; **3,318,545,** same, WEB TRANSPORT SYSTEM; **3,383,578,** same, CONTINUOUS MODE MOTOR SPEED CONTROL SYSTEM, **filed** Sept. 21, 1977, D.C., C.D. Calif. (Los Angeles), Doc. CV77-3531-R, *Ampex Corp.* v. *National Cash Register Co. et al.*

3,225,799, Ernest A. Hayden & John S. Tanner, LUMBER SAWING ATTACHMENT FOR PORTABLE CHAIN SAW; **3,366,150,** William Malloff, SAW CHAIN, **filed** Oct. 6, 1977, D.C.N.J. (Newark), Doc. 77–2090, *Granberg Industries, Inc.* v. *Robert Sperber and Sperber Tool Works, Inc.* Judgment in favor of plaintiff, filed Mar. 29, 1979.

3,260,410. (See 3,172,571.)

3,260,411. (See 3,172,571.)

3,268,119, Rudd-Melikian, Inc., VENDING MACHINE EQUIPMENT, **filed** Apr. 24, 1979, D.C.N.J. (Newark), Doc. 79–1251, *Refreshment Machinery Incorporated* v. *Flagstaff Corporation.*

3,270,852, Robert Fondiller, TYPEWRITER ERASURE MECHANISM, **filed** Mar. 23, 1979, D.C., S.D.N.Y., Doc. 79–1556 MEL, *Robert Fondiller* v. *International Business Machines Corp.*

3,295,725. (See 3,172,571.)

3,308,323, High Voltage Engineering Corporation, INCLINED-FIELD HIGH-VOLTAGE VACUUM TUBES, **filed** Mar. 14, 1979, D.C. Mass. (Boston), Doc. 79–510–G, *High Voltage Engineering Corporation* v. *Dowlish Developments Limited.*

3,318,545. (See 3,185,364.)

3,318,545, Ampex Corporation, WEB TRANSPORT SYSTEM; **3,379,948,** same, TAPE TRANSPORT DRIVE SYSTEM, **filed** Apr. 12, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78–0797WWS, *Ampex Corporation* v. *Data General Corp.* Order of dismissal filed Apr. 5, 1979.

3,347,419. (See 3,172,571.)

3,366,150. (See 3,225,799.)

3,379,948. (See 3,318,545.)

3,383,578. (See 3,185,364.)

3,429,142, S. A. Zuccolo Rochet & Cie, WATCH BAND ADJUSTABLE CLASP, **filed** Mar. 30, 1979, D.C., S.D.N.Y., Doc. 79–C–1668 (WK), *S. A. Zuccolo Rochet & Cie.* v. *Westerman Mfg. Co., Inc.*

3,453,970, Ideal Toy Corporation, STEERABLE TOY VEHICLE; **4,078,799,** same, TOY VEHICLE AND TOY VEHICLE GAME; **4,141,552,** same, TOY DRONE CAR GAME; **4,141,553,** same, TOY VEHICLE GAME, **filed** Sept. 11, 1978, D.C. Del. (Wilmington), Doc. 78–388, *Ideal Toy Corporation* v. *Tyco Industries, Inc.* Pat. Nos. 3,453,970, 4,141,552 and 4,141,553 included by supplemental complaint, filed Mar. 23, 1979.

3,499,380, Nelson L. Gongwer, AUTOMATIC FOOD COOKING MACHINE, **filed** Aug. 2, 1978, D.C., N.D. Ind. (South Bend), Doc. 878–0166, *Nelson L. Gongwer* v. *Mark Stitt.* Pursuant to joint stipulation, action dismissed without prejudice with parties bearing their own costs, filed Mar. 29, 1979.

3,515,619, Dimensional Plastics Corp., RESINOUS PLASTIC SHEETS, SHAPES, PANELS AND SLABS SIMULATING OBSIDIAN AND QUARTZ, **filed** Nov. 30, 1978, D.C., S.D. Tex. (Houston), Doc. CA H–78–2308, *Dimensional Plastics Corp.* v. *Frank Lazarus Cañigas.* Plaintiff's motion to dismiss without prejudice is granted, filed Mar. 26, 1979.

3,581,798, Josef Malamed, VENETIAN BLIND CONSTRUCTION, **filed** Apr. 26, 1979, D.C., S.D.N.Y., Doc. 79–C–2192LBS, *Josef Malamed and Continental Workroom Inc.* v. *Venetiannaire Corp. of America.*

3,606,258, Fibco, Inc., ENERGY ABSORBING DECELERATION BARRIERS, **filed** Jan. 27, 1975, D.C., N.D. Ill. (Chicago), Doc. 75c277, *Fibco, Inc.* v. *Energy Absorption Systems, Inc.* Cause dismissed with prejudice and without costs, filed Sept. 15, 1976.

3,608,210, California Automotive Research, TRAFFIC HAZARD SIMULATOR, **filed** Mar. 30, 1979, D.C., S.D. Calif. (San Diego), Doc. 79–0336, *California Automotive Research* v. *Applied Personal Dynamics and Doug Kessler.*

3,624,205, Burroughs Wellcome & Co. (U.S.A.) Inc., TREATMENT OF HYPERURICEMIA IN HUMANS, **filed** Mar. 21, 1979, D.C., S.D. Fla. (Miami), Doc. 79–6167–C–SMA, *Burroughs Wellcome Co. Etc.* v. *Generix Drug Corp. Etc.* **Same, filed** Mar. 21, 1979, D.C.N.J. (Newark), Doc. C79–799, *Burroughs Wellcome Co.* v. *Pharmadyne Laboratories, Inc.* Order of dismissal of action, filed June 5, 1979.

3,625,793, Mallinckrodt, Inc., BALLOON-TYPE CATHETERS AND METHOD OF MANUFACTURE, **filed** May 16, 1977, D.C. Del. (Wilmington), Doc. 77–178, *Mallinckrodt, Inc.* v. *Brunswick Corp. et al.* Stipulation and order dismissing case with prejudice, with each party bearing own costs, filed Mar. 30, 1979.

3,644,164, Wesley S. C. Chin, PLASTIC GREENERY STRIPS FOR DECORATIVE PURPOSES, **filed** Jan. 10, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–0131–IH, *Wesley S. C. Chin et al.* v. *Keene Corporation.*

3,652,974, Milross Controls, Inc., INTEGRATED CIRCUIT CARRIER, **filed** Mar. 13, 1979, D.C., N.D. Ind. (South Bend), Doc. 879–0058, *Milross Controls, Inc.* v. *Wells Electronics, Inc.*

3,661,144, Jensen and Jensen, SUCTION APPARATUS FOR BODY CAVITIES, **filed** Feb. 23, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78–0409 CFP, *A/S Ferrosan* v. *Berkeley Bio-Medical Inc.* Defendants are permanently enjoined from making, using, selling etc. the body cavity aspiration devices of U.S. Patent 3,661,144, filed Mar. 23, 1979.

3,668,653, Sundstrand Corporation, CONTROL SYSTEM, **filed** Mar. 23, 1979, D.C., E.D. Mich. (Detroit), Doc. 79–70826, *White Consolidated Industries, Inc.* v. *Vega Servo-Control, Inc.*

3,670,072, Cambridge Chemical Products, Inc., HEMATOLOGICAL STAIN SYSTEM, **filed** Mar. 22, 1979, D.C., S.D. Fla. (Miami), Doc. 79–6172–C–JLK, *Cambridge Chemical Products, Inc.* v. *MC/B Manufacturing Chemists, Inc. et al.*

3,679,977, Bell Telephone Laboratories, PRECODED TERNARY DATA TRANSMISSION, **filed** Jan. 11, 1979, D.C., S.D. Fla. (Miami), Doc. 79–118–C–JAG, *Racal-Milgo, Inc.* v. *American Telephone and Telegraph Company et al.*

3,708,388, Air Products and Chemicals, Inc., PROCESS OF LAMINATING USING VINYL ACETATE-ETHYLENE COPOLYMER LATEX ADHESIVE COMPOSITION, **filed** May 2, 1979, D.C.S.C. (Greenville), Doc. 79–826, *Air Products and Chemicals, Inc.* v. *Chas. S. Tanner Co.*

3,710,082, Edwin A. Sloane and Charles L. Heizman, SYSTEM FOR DIGITALLY CONTROLLING A VIBRATION TESTING ENVIRONMENT OR APPARATUS, **filed** May 17, 1979, D.C., S.D. Calif. (San Diego), Doc. 79–0658–N, *Genrad, Inc.* v. *Spectral Dynamics Corporation.*

3,715,555, Ray M. Johnson, CIRCULAR WAVEGUIDE MICROWAVE APPLICATOR, **filed** Mar. 28, 1979, D.C., N.D. Calif. (San Francisco), Doc. C–79–671–SW, *Ray M. Johnson* v. *Microdry Corp.*

3,715,962, Spectral Data Corporation, SPECTRAL-ZONAL COLOR RECONNAISSANCE SYSTEM; **Re. 29,085,** same, **filed** Apr. 23, 1979, U.S. Court of Claims (Washington, D.C.), Doc. 150–79, *Spectral Data Corporation* v. *The United States.*

3,738,217, Omark Industries, Inc., INSULATION HANGER, **filed** Apr. 30, 1979, D.C.N.J. (Camden), Doc. C79–1350, *KSM Division of Omark Industries, Inc.* v. *H. S. Jones Company Incorporated.*

3,804,642, Foseco International Limited, EXOTHERMIC ANTIPIPING COMPOSITIONS, **filed** May 24, 1979, D.C., N.D. Ohio (Cleveland), Doc. C79–1075, *Foseco International Limited* v. *Oglebay Norton Company.* **Same, filed** May 24, 1979, D.C., N.D. Ohio (Cleveland), Doc. C79–1076, *Foseco International Limited* v. *National Pigment Company, Inc. et al.*

3,826,068, Weed Eaters, Inc., ROTARY CUTTING ASSEMBLY; **3,859,776,** same, **filed** May 26, 1977, D.C., W.D. Wis. (Madison), Doc. 77–C–204, *Weed Eater, Inc.* v. *The Toro Company and Toro Sales Company, Inc.* Plaintiff's motion to dismiss granted on Sept. 5, 1978.

3,859,776. (See 3,826,068.)

3,899,654, Wahl Clipper Corp., SOLDERING IRON TIP ASSEMBLY AND CORDLESS SOLDERING IRON EMBODYING SAME, **filed** June 6, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c2312, *Wahl Clipper Corporation* v. *Tandy Corp. et al.*

3,928,993, Takeji Owamoto, HOLDING TOY, **filed** Dec. 5, 1978, D.C., N.D. Calif. (San Francisco), Doc. C78–2805, *ITI Hawaii* v. *So-Young America etc.* **Same, filed** May 3, 1979, D.C., N.D. Calif. (San Francisco), Doc. C–79–1066 CBR, *ITI Hawaii, Inc.* v. *Golden Crown Enterprises, Inc.*

4,028,167, Gerber Garment Technology, Inc., LABEL APPLICATOR FOR AUTOMATICALLY CONTROLLED CUTTING MACHINE; **4,137,804,** same, FLUID CUTTING JET RECEIVER, **filed** Feb. 5, 1979, D.C., N.D. Tex. (Dallas), Doc.

CA3–79–135–F, *Camsco, Inc.* v. *Gerber Scientific, Inc.* Order dismissing case without prejudice to reopening within sixty days if settlement not consummated, filed Mar. 6, 1979.

4,036,486, C & H Manufacturing Company, STOP MEANS FOR MAT BOARD CUTTER, filed May 18, 1979, D.C., S.D. Miss. (Jackson), Doc. J79–0261(N), *C & H Manufacturing Company* v. *Keeton Products International, Inc.*

4,077,335, Umberto Luzzani et al., EXTENSIBLE TABLE, filed Apr. 24, 1979, D.C., M.D.N.C. (Greensboro), Doc. C–79–272–S, *Cicci Enterprises, Inc.* v. *Bassett Mirrow Co., Inc.*

4,078,799. (See 3,453,970.)

4,092,451, Howard Sernaker, EMBROIDERY TRANSFER; **4,140,562,** same, METHOD OF MAKING EMBROIDERY TRANSFER, filed Apr. 16, 1979, D.C.N.J. (Newark), Doc. C79–1095, *Virginville Patents, Inc.* v. *Swiss Maid Emblems et al.*

4,096,523, Armand Belmares-Barabia, Stanley J. Chayka and Robert M. Lund, COLOR CORRECTION SYSTEM, filed June 9, 1978, D.C., S.D.N.Y., Doc. 78–C–2652 WCC, *Video Corporation of America* v. *Stanley J. Chayka.*

4,099,478, Brunswick Corporation, HIGH THRUST TROLLING MOTOR, filed May 18, 1979, D.C., W.D. Wis. (Milwaukee), Doc. 79–342, *Brunswick Corporation* v. *Minn Kota, Inc. et al.*

4,100,711, Transco, Inc., PREFABRICATED INSULATING PANEL, filed Apr. 25, 1979, D.C., N.D. Ill. (Chicago), Doc. 79c1678, *Transco, Inc.* v. *Lisco Incorporated and Raymond Urban.*

4,101,703, Schwarzkopf Development Corporation, COATED CEMENTED CARBIDE ELEMENTS, filed Apr. 24, 1979, D.C., W.D. Pa. (Pittsburgh), Doc. 79–546, *Kennametal Inc.* v. *Schwarzkopf Development Corporation.*

4,104,856, Deutsch and Jones, TILT-UP PANEL BRACKET, filed May 11, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1711 LEW (Sx), *J. A. Deutsch & Co., Inc.* v. *Ramon Navarro et al.*

4,112,138, The Mead Corporation, MANIFOLD CARBONLESS FORM AND PROCESS FOR THE PRODUCTION THEREOF, filed May 21, 1979, D.C., E.D. Wis. (Milwaukee), Doc. 79–344, *The Mead Corporation* v. *Shade Information Systems, Inc.*

4,137,804. (See 4,028,167.)

4,140,563. (See 4,092,451.)

4,141,552. (See 3,453,970.)

4,141,553. (See 3,453,970.)

4,145,780, Classic Products Corporation, WATERBED ASSEMBLY, filed May 1, 1979, D.C., C.D. Calif. (Los Angeles), Doc. 79–1571–F (Kx), *Marina Marine, Inc. et al.* v. *Classic Products Corporation.*

4,146,602, Becton, Dickinson and Company, SIMULTANEOUS RADIOASSAY OF FOLATE AND VITAMIN B12, filed May 9, 1979, D.C. Mass. (Boston), Doc. C.A. 79–924–K, *Becton, Dickinson and Company* v. *Ria Products, Inc.*

Re. 29,085. (See 3,715,962.)

D. 207,718, Anchor Hocking Glass Corporation, TUMBLER OR SIMILAR ARTICLE, filed July 6, 1977, D.C., W.D. Okla. (Oklahoma City), Doc. C77–0657–T, *Anchor Hocking Corporation et al.* v. *Continental Plastics Company.* The claims of plaintiffs asserted in complaint and counterclaims of defendants in amended answer and counterclaim are dismissed with prejudice.

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,017,557, Re. S.N. 969,935, Filed Dec. 15, 1978, Cl. 260/857 G, NOVEL ELASTOMERIC GRAFT COPOLYMERS, Clarence Frederick Hammer, et al., Owner of Record: *E. I. Du Pont de Nemours and Company, Wilmington, Del.*, Attorney or Agent: Paul R. Steyermark, Ex. Gp.: 142

4,023,014, Re. S.N. 37,945, Filed May 19, 1979, Cl. 235/61.7 B, CREDIT CARD VERIFIER, Kenneth N. Goldberg, Owner of Record: *Inventor,* Attorney or Agent: Robert C. Schmertz, Jr., Ex. Gp.: 235

4,058,348, Re. S.N. 038,591, Filed May 14, 1979, Cl. 303/35, BRAKE APPARATUS WITH A COMBINED BRAKE CYLINDER AND RESERVOIR, James E. Hart, Owner of Record: *Westinghouse Air Brake Company, Wilmerding, Pa.*, Attorney or Agent: R. W. McIntire, Jr., Ex. Gp.: 315

4,129,458, Re. S.N. 033,991, Filed Apr. 27, 1979, Cl. 136/89 PC, SOLAR-CELL ARRAY, Roy Kaplow, et al., Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.*, Attorney or Agent: Roy C. Hopgood, et al., Ex. Gp.: 114

PATENT NOTICES

Certificates of Correction for the Week of July 24, 1979

Re. 29,957	4,102,650	4,136,166	4,145,188
3,918,940	4,102,839	4,137,195	4,145,217
3,968,879	4,106,345	4,137,242	4,145,260
3,991,108	4,107,749	4,137,485	4,145,365
4,001,073	4,108,963	4,137,623	4,145,597
4,019,393	4,109,297	4,139,257	4,145,958
4,022,513	4,110,293	4,139,460	4,147,450
4,025,163	4,110,804	4,140,372	4,147,518
4,025,533	4,111,226	4,140,459	4,147,813
4,037,039	4,111,799	4,140,573	4,148,132
4,043,976	4,111,883	4,140,754	4,148,157
4,051,106	4,115,308	4,141,466	4,148,243
4,055,393	4,115,538	4,141,787	4,148,453
4,056,203	4,116,606	4,141,903	4,148,841
4,058,580	4,117,439	4,142,241	4,148,975
4,060,551	4,117,830	4,142,487	4,149,235
4,063,009	4,119,554	4,142,499	4,149,676
4,080,507	4,120,562	4,142,794	4,149,744
4,082,142	4,120,618	4,142,940	4,149,754
4,086,441	4,122,281	4,143,210	4,149,927
4,087,366	4,122,964	4,143,212	4,150,632
4,088,421	4,123,388	4,143,787	4,151,080
4,088,695	4,125,067	4,144,040	4,151,101
4,088,768	4,127,932	4,144,179	4,152,218
4,089,600	4,129,416	4,144,225	4,152,900
4,091,087	4,131,730	4,144,390	4,153,055
4,091,173	4,132,887	4,144,613	4,153,671
4,094,719	4,133,979	4,144,617	4,153,694
4,097,278	4,134,068	4,144,702	4,153,783
4,097,458	4,134,141	4,144,880	4,153,873
4,098,976	4,136,095	4,144,939	4,154,608
4,100,217	4,136,109	4,145,173	4,156,453
4,102,107	4,136,115	4,145,176	

Disclaimers

3,882,313.—*Dan H. Siemens, Jr.*, Richland, Wash. CONCENTRIC ANNULAR TANKS. Patent dated May 6, 1975. Disclaimer filed Apr. 17, 1979, by the assignee, *Westinghouse Electric Corporation.*

Hereby enters this disclaimer to claims, 1, 7 and 8 of said patent.

4,022,973.—*Bill L. Stackhouse* and *Theodore E. Taylor*, Lynchburg, Va. APPARATUS FOR INDICATING SYNCHRONIZATION AND OUT-OF-SYNCHRONIZATION CONDITIONS. Patent dated May 10, 1977. Disclaimer filed Apr. 30, 1979, by the assignee, *General Electric Company.*

Hereby enters this disclaimer to claims 1 and 2 of said patent.

4,153,692.—*Wolfgang Krämer, Karl Heinz Büchel* and *Manfred Plempel*, Wuppertal, Germany. ACYLATED IMIDAZOLYL-O,N-ACETALS, THEIR PHARMACEUTICALLY ACCEPTABLE SALTS AND METAL COMPLEXES. Patent dated May 8, 1979. Disclaimer filed June 4, 1979, by the assignee, *Bayer Aktiengesellschaft.*

The term of this patent subsequent to Jan. 16, 1996 has been disclaimed.

Dedication

4,035,770.—*Susan Lillie Sarle*, Chatham, N.J. SWITCHING SYSTEM FOR USE WITH COMPUTER DATA LOOP TERMINALS AND METHOD OF OPERATING SAME. Patent dated July 12, 1977. Dedication filed Apr. 6, 1979, by the assignee, *International Business Machines Corporation.*

Hereby dedicates to the Public the remaining term of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for domestic and possibly foreign licensing in accordance with the licensing policies of the agency-sponsors.

Copies of the patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $.50 each. Requests for copies of patents must include the patent number.

Copies of the patent applications can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161 for $4.00 ($8.00 outside North American Continent). Requests for copies of patent applications must include the patent application number. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent and Trademark Office. Claims and other technical data will usually be made available to serious prospective licensees by the agency which filed the case.

Requests for licensing information on a particular invention should be directed to the address cited for the agency-sponsor.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

U.S. DEPARTMENT OF THE AIR FORCE
AF/JACP, 1900 Half St., SW., Washington, D.C. 20324

Patent application 929,614. Latch Mechanism. Filed July 31, 1978.

Patent application 956,305. Cooling Apparatus for an Exhaust Nozzle of a Gas Turbine Engine. Filed Oct. 30, 1978.

Patent application 956,704. A Combined Receiver Protector, AGC Attenuator and Sensitivity Time Control Device. Filed Nov. 1, 1978.

Patent application 958,929. Indicator for Detection of SO_2 Leakage. Filed Nov. 8, 1978.

Patent application 959,048. System for Releasably Connecting Blades to Rotor. Filed Nov. 9, 1978.

Patent application 959,050. Optical Protractor. Filed Nov. 9, 1978.

Patent application 960,207. Multiplexing of Multiple Loop Sidelobe Cancellers. Filed Nov. 13, 1978.

Patent application 962,411. Interferogram Synthesization Method and Apparatus. Filed Nov. 20, 1978.

Patent application 962,741. Line-of-Sight Stabilization Reflector Assembly. Filed Nov. 21, 1978.

U.S. DEPARTMENT OF AGRICULTURE
Research Agreements & Patent Branch, General Service Division, Federal Bldg., Agricultural Research Service
Hyattsville, Md. 20782

Patent application 897,811. Sequential Velocity Disk Refiner. Filed Apr. 19, 1978.

Patent 4,125,708. Chitosar Modified With Anionic Agent and Glutaraldehyde. Filed Feb. 15, 1977. Patented Nov. 14, 1978. Not available NTIS.

Patent 4,133,784. Biodegradable Film Compositions Prepared From Starch and Copolymers of Ethylene and Acrylic Acid. Filed Sept. 28, 1977. Patented Jan. 9, 1979. Not available NTIS.

U.S. DEPARTMENT OF ENERGY
Assistant General Counsel for Patents
Washington, D.C. 20545

Patent application 841,087. Interferometric Correction System for a Numerically Controlled Machine. Filed Oct. 11, 1977.

Patent application 843,182. Acoustic Imaging System. Filed Oct. 18, 1977.

Patent 4,082,607. Fuel Subassembly Leak Test Chamber for a Nuclear Reactor. Filed Sept. 30, 1976. Patented Apr. 4, 1978. Not available NTIS.

Patent 4,087,323. Pipe Connector. Filed Dec. 9, 1976. Patented May 2, 1978. Not available NTIS.

Patent 4,087,324. Pile Construction. Filed Oct. 30, 1951. Patented May 2, 1978. Not available NTIS.

Patent 4,088,182. Temperature Control System for a J-Module Heat Exchanger. Filed May 29, 1974. Patented May 9, 1978. Not available NTIS.

Patent 4,088,533. Radionuclide Trap. Filed Jan. 18, 1977. Patented May 9, 1978. Not available NTIS.

Patent 4,089,535. Dual-Shank Attachment Design for Omega Seals. Filed Jan. 25, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,089,743. Flow Duct for Nuclear Reactors. Filed Jan. 21, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,091,288. Threshold Self-Powered Gamma Detector for Use as a Monitor of Power in a Nuclear Reactor. Filed Apr. 4, 1977. Patented May 23, 1978. Not available NTIS.

Patent 4,092,498. Neutronic Reactor. Filed Aug. 29, 1952. Patented May 30, 1978. Not available NTIS.

Patent 4,092,542. High-Resolution Radiography by Means of a Hodoscope. Filed Jan. 27, 1977. Patented May 30, 1978. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

National Institutes of Health, Chief, Patent Branch
Westwood Building, Bethesda, Md. 20250

Patent 4,110,461. Effect of Diphenylhydantoin and Related Compounds on Glaucoma. Filed Mar. 19, 1973. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,115,418. 1,2-Diaminocyclohexane Platinum (II) Complexes Having Antineoplastic Activity. Filed Sept. 2, 1976. Patented Sept. 19, 1978. Not available NTIS.

Patent 4,138,089. Slide Valve. Filed Aug. 9, 1977. Patented Feb. 6, 1979. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts., NW.,
Washington, D.C. 20240

Patent application 942,846. Removal of Asbestos Fibers From Water. Filed Sept. 15, 1978.

Patent 4,089,812. Massive Catalyst. Filed May 13, 1977. Patented May 16, 1978. Not available NTIS.

Patent 4,094,955. Acid Process for Recovery of Alumina From Clay. Filed June 24, 1977. Patented June 13, 1978. Not available NTIS.

Patent 4,096,944. Cartridge for Grouting an Anchor Element in a Hole of a Support Structure. Filed Nov. 21, 1977. Patented June 27, 1978. Not available NTIS.

Patent 4,097,854. Sensing Mechanism for Mine Roof Bolting Apparatus. Filed Mar. 4, 1977. Patented June 27, 1978. Not available NTIS.

Patent 4,102,816. Adsorbent for Polynuclear Aromatic Compounds. Filed Oct. 18, 1976. Patented July 25, 1978. Not available NTIS.

Patent 4,105,328. Method of and Apparatus for Manipulating Line Weight in an Image. Filed June 29, 1976. Patented Aug. 8, 1978. Not available NTIS.

Patent 4,110,344. Adsorbent for Polynuclear Aromatic Compounds. Filed Oct. 18, 1977. Patented Aug. 29, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE NAVY

Assistant Chief for Patents, Office of Naval Research
Code 302, Arlington, Va. 22217

Patent application 947,810. A Mixture Suitable for an Aerostat. Filed Oct. 2, 1978.

Patent application 970,414. Safe-Arm Device for Directed Warhead. Filed Dec. 18, 1978.

Patent application 972,124. An Acoustical Dereverberator. Filed Dec. 19, 1978.

Patent application 972,538. An AC Initiation System. Filed Dec. 18, 1978.

Patent 4,104,970. Electronic Ignition System for Liquid Explosive. Filed Feb. 10, 1977. Patented Aug. 8, 1978. Not available NTIS.

Patent 4,106,906. Method for Suppressing Water Evaporation Using a Polybutadiene Film. Filed Jan. 31, 1977. Patented Aug. 15, 1978. Not available NTIS.

Patent 4,108,025. Aircraft Head-Up Display Unit Mount Adjustment Tool. Filed May 27, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,108,604. Analytical Method for TNT in Water. Filed July 18, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,109,216. Microwave Generator. Filed May 31, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,109,232. Correction and Transmission System for Directional Target Information. Filed June 6, 1977. Patented Aug. 22, 1978. Not available NTIS.

Patent 4,109,998. Optical Slippings. Filed Feb. 28, 1977. Patented Aug. 29, 1978. Not available NTIS.

Patent 4,111,728. Gas Generator Propellants. Filed Feb. 11, 1977. Patented Sept. 5, 1978. Not available NTIS.

Patent 4,118,930. Filter-Cooler. Filed Nov. 3, 1977. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,119,917. Sequentially Triggering Two or More Hydrogen Thyratrons With Precision Timing. Filed Nov. 3, 1977. Patented Oct. 10, 1978. Not available NTIS.

Patent 4,121,496. Gun Pod Stationary Blast Diffuser. Filed May 2, 1977. Patented Oct. 24, 1978. Not available NTIS.

Patent 4,122,754. Dependent Sway Bracing Weapon Restraints. Filed Aug. 5, 1977. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,122,912. Dry Cooled Jet Aircraft Runup Noise Suppression System. Filed Mar. 23, 1977. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,122,927. Disconnect Linkage for Force Transmission System. Filed May 13, 1977. Patented Oct. 31, 1978. Not available NTIS.

Patent 4,123,939. Thermal Standard. Filed Apr. 19, 1977. Patented Nov. 7, 1978. Not available NTIS.

Patent 4,127,033. Ultrasonic Scanner System for Cast Explosive Billets. Filed Aug. 23, 1976. Patented Nov. 28, 1978. Not available NTIS.

TENNESSEE VALLEY AUTHORITY

Division of Law, Muscle Shoals, Ala. 35660

Patent 4,066,432. Production of Suspension Fertilizers From Wet-Process Orthophosphoric Acids. Filed Jan. 28, 1977. Patented Jan. 3, 1978. Not available NTIS.

Patent 4,113,842. Preparation of Dicalcium Phosphate From Phosphate Rock by the Use of Sulfur Dioxide, Water, and Carbonyl Compounds. Filed Mar. 18, 1977. Patented Sept. 12, 1978. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR

Branch of Patents, 18th and C Sts.
Washington, D.C. 20240

Patent 4,090,935. Process for Recovering Silver, Copper and Stainless Steel From Silver Brazed Stainless Steel Sections. Filed July 12, 1977. Patented May 23, 1978. Not available NTIS.

Patent 4,094,158. Loading Gate for Mine Roof Bolter Apparatus. Filed May 27, 1977. Patented June 13, 1978. Not available NTIS.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The libraries listed herein, designated as patent depository libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent months or years in some libraries to all or most of the patents issued since 1870, or earlier, in other libraries.

These patent collections are open to public use and each of the patent depository libraries, in addition, offers the publications of the patent classification system (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

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Owing to variations in the scope of patent collections among the patent depository libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
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California	Los Angeles Public Library	(213) 626–7555 Ext. 274
	Sacramento: California State Library	(916) 322–4572
	Sunnyvale Patent Library*	(408) 736-0795
Colorado	Denver Public Library	(303) 573-5152 Ext. 223
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4519
Illinois	Chicago Public Library	(312) 269-2814
Massachusetts	Boston Public Library	(617) 536-5400 Ext. 265
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Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 214
Nebraska	Lincoln: University of Nebraska-Lincoln, Love Library	(404) 472-3411
New Jersey	Newark Public Library	(201) 733-7740
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 790-6291
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County Public Library	(513) 369-6969
	Cleveland Public Library	(216) 623-2932
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 242–7361 Ext. 258
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Pennsylvania	Philadelphia: Franklin Institute Library	(215) 448-1226
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3128
	University Park: The Pennsylvania State Libraries	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-7722 Ext. 224
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	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3043

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

WILLIAM FELDMAN, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF APRIL 21, 1979

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—S. N. ZAHARNA, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	8-11-78
GENERAL ORGANIC CHEMISTRY, GROUP 120—A. L. LEAVITT, Director. Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	5-2-78
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, Treating Processes, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	7-6-78
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—R. FRIEDMAN, Director. Coating; Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-20-78
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—H. S. VINCENT, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	12-1-77
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARLSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	11-2-77
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear and Reactors; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptograph; Laser Devices; Radioactive Materials; Power Metallurgy, Rocket Fuels.	2-3-78
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—N. ANSHER, Director. Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	6-1-78
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—A. L. SMITH, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	8-25-78
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-77
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	5-17-77
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—M. M. NEWMAN, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	2-22-78
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—S. S. MATTHEWS, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	5-11-78
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—B. R. GRAY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	4-7-78
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-30-78
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—G. M. FORLENZA, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Textiles; Apparel and Shoes; Sewing Machines; Machine Elements; Clutches.	12-20-77

Expiration of patents: The patents within the range of numbers indicated below expire during April 1979, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 3,027,558 to 3,031,668, inclusive
Plant Patents..... Numbers 2,135 to 2,142, inclusive

REISSUES

JULY 24, 1979

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

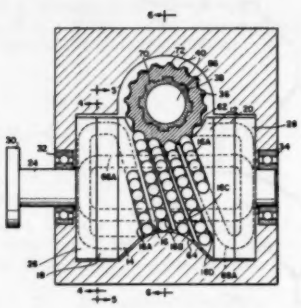
Re. 30,049
POWER TRANSFER

Ewald Schutz, Lancaster, Pa., assignor to Power Transfer Corporation, Lancaster, Pa.

Original No. 4,023,433, dated May 17, 1977, Ser. No. 481,993, Jun. 24, 1974. Application for reissue May 19, 1978, Ser. No. 907,808

Int. Cl.[2] F16H *1/16, 55/06, 55/04, 55/22*

U.S. Cl. 74—425 30 Claims



1. A power transfer unit of the type including a housing, a drive gear shaft rotatable within the housing and a pinion gear shaft rotatable within the housing comprising

A. a drive gear associated with the drive gear shaft,

1. said drive gear being provided with a plurality of continuous power transfer material flow paths,

2. said drive gear terminating laterally in a pair of spaced heads,

3. at least some of the flow paths of the drive gear extending longitudinally the entire length of the drive gear and terminating at each head of the drive gear;

B. a rotatively mounted pinion gear disposed adjacent to said drive gear,

1. said pinion gear including a plurality of grooves in its outer surface, portions of the flow paths in the drive gear being adapted to overlie portions of the grooves of the pinion gear in a power transfer area; and

C. power transfer material in moving engagement with the overlying portions of the flow paths of the drive gear and the grooves of the pinion gear in the power transfer area for transferring rotative power between said drive gear and pinion gear.

Re. 30,050
INTERLOCK SYSTEM FOR A GASOLINE DISPENSING NOZZLE

William B. Hansel, Media, Pa., assignor to Suntech, Inc., Philadelphia, Pa.

Original No. 4,011,897, dated Mar. 15, 1977, Ser. No. 635,189, Nov. 25, 1975. Application for reissue Jun. 23, 1978, Ser. No. 918,620

Int. Cl.[2] B65B *57/06*

U.S. Cl. 141—207 5 Claims

1. A nozzle for dispensing fluid which is designed to permit operation of the nozzle only when the discharge spout of the nozzle is properly inserted into the fillpipe inlet of the tank being filled, with the discharge spout being inserted in the fillpipe a predetermined distance and the lower side of the discharge [spount] *spout* being urged toward the inside of the fillpipe inlet, so that in the event the nozzle falls from the fillpipe, dispensing of fluid is immediately terminated, said nozzle comprising:

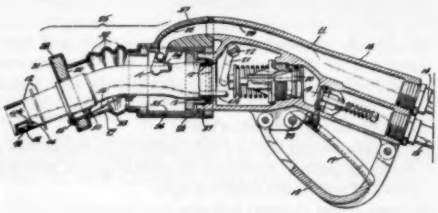
a. a nozzle housing;

b. a discharge spout, connected to the nozzle housing, for insertion into the fillpipe of the tank to be filled;

c. a main nozzle valve in the nozzle housing;

d. means for controlling the position of the nozzle valve for regulating the dispensing of fluid through the nozzle housing and discharge spout, said controlling means having an enabling position wherein the position of the main nozzle valve can be regulated and a disabling position wherein the main nozzle valve remains in or obtains a closed position; [and]

e. an automatic shut-off system which acts in response to the liquid level in the tank being filled reaching the discharge end of the discharge spout, to place the nozzle valve controlling



means in its disabling position by means of a vacuum deactivating the main nozzle valve, said vacuum being created by the closing of a vent line within said nozzle extending from the end of the discharge spout to the main nozzle valve; and

[e.] *f.* interlock means, responsive to the discharge spout being inserted into the fillpipe a predetermined distance and the lower side of the discharge spout being urged toward the inside of the fillpipe inlet, for maintaining the controlling means in a disabled condition at all times *by closing said vent line* except when the discharge spout is inserted in the fillpipe inlet the predetermined distance and the lower side of the discharge spout is urged toward the inside of the fillpipe inlet, thereby assuring that the nozzle cannot *be operated* [operate] except when it is properly inserted in the fillpipe of the tank being filled and that its operation will be immediately terminated should the nozzle fall from the fillpipe.

Re. 30,051
CHOPPER ARRANGEMENT FOR ATOMIC ABSORPTION SPECTROPHOTOMETER

Werner K. Lahmann, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Original No. 3,901,601, dated Aug. 26, 1975, Ser. No. 435,338, Jan. 21, 1974. Application for reissue Jul. 27, 1977, Ser. No. 819,365

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1973, 2303533

Int. Cl.[2] G01J *3/42, 3/08*

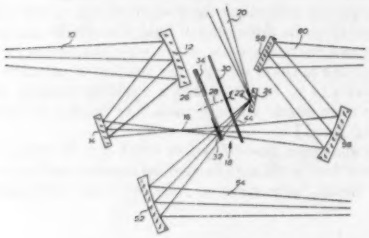
U.S. Cl. 356—325 11 Claims

9. In a double-beam spectrophotometer optical testing system having a sample beam path passing through a sample substance and a reference beam path, including a line-emitting first light source which emits a resonance line of an element of interest desired to be measured and a second light source emitting a continuous spectrum, a monochromator for selecting a limited spectral range containing the resonance line from the entire continuous

spectrum, a detector impinged upon by the sample and reference beams of light and a signal analyzer circuit connected to generate an output signal from the detector corrected with respect to the background absorption,

a chopper arrangement by which, in a predetermined cyclical sequence of four successive intervals, light from the line emitting first light source is directed to the sample and reference paths and light from the continuous spectrum light source is similarly directed to the sample and reference paths,

said chopper arrangement comprising:



two disc-like elements having a common axis and being mounted in offset relationship along their common axis and being rotatable coaxially and conjointly, each of said disc-like elements being mounted so as to be rotatable through each of said beam paths;

one of said elements having a light transmissive portion and a reflecting portion positioned to periodically, alternately pass and reflect said beams of light;

the other of said elements having a light transmissive portion and a light blocking portion positioned to periodically, alternately pass and block one of said beams of light.

Re. 30,052

ELECTRICAL CONTACT MATERIAL AND PROCESS

Terrence A. Davies, Encino, Calif., and David J. Pedder, Oxford, England, assignors to Square D Company, Park Ridge, Ill.

Original No. 4,011,053, dated Mar. 8, 1977, Ser. No. 622,786, Oct. 15, 1975. Continuation-in-part of Ser. No. 387,884, Aug. 13, 1973, abandoned, and a continuation-in-part of Ser. No. 340,440, Mar. 12, 1973, abandoned. Application for reissue Dec. 23, 1977, Ser. No. 863,542

Claims priority, application United Kingdom, Mar. 15, 1972, 12189/72; Aug. 18, 1972, 38568/72; Aug. 25, 1972, 39667/72

Int. Cl.[2] B22F 3/00; C22C 29/00

U.S. Cl. 75—234 **61 Claims**

1. A material for use in making electrical contacts for power level applications consisting essentially of a first metal selected from a group consisting of silver and copper, an oxide of a second metal selected from a group consisting of cadmium, tin, and zinc added in an amount from a minimum effective amount up to a maximum equal to the limit of solubility of the second metal in the first metal, and an oxide of a third metal selected from a group consisting of metals in group IA and IIA of a periodic table *with the oxides of the second and the third metals uniformly distributed throughout the material.*

33. An electrical contact for electrical power applications comprising a first metal selected from a group consisting of silver and copper, an oxide of a second metal selected from a group consisting of cadmium, tin and zinc added in an amount from a miniumum effective amount up to a maximum equal to the limit of solubility of the second metal in the first metal, and an oxide of a third metal selected from a group consisting of the metals in groups IA and IIA of a periodic table *with the oxides of the second and the third metals uniformly distributed throughout the material.*

Re. 30,053

PG-TYPE, 1,9-LACTONES

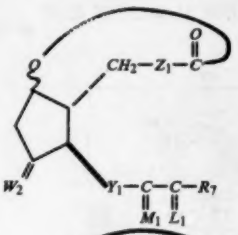
Gordon L. Bundy, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

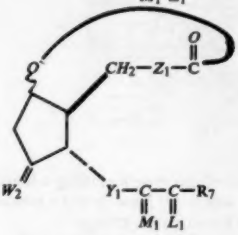
Original No. 4,049,648, dated Sep. 20, 1977, Ser. No. 670,522, Mar. 29, 1976. Continuation-in-part of Ser. No. 589,724, Jun. 23, 1975, abandoned. Application for reissue Jan. 16, 1978, Ser. No. 869,900

Int. Cl.[2] C07D 313/00

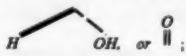
U.S. Cl. 542—426 **113 Claims**

91. A prostaglandin-type, 1,9-lactone of the formula

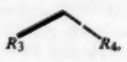




wherein W_2 is



wherein L_1 is

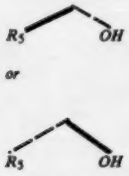


or a mixture of

and

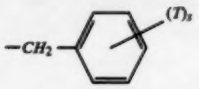
wherein R_3 and R_4 are hydrogen, methyl, or fluoro, being the same

or different, with the proviso that one of R_3 and R_4 is fluoro, only when the other is hydrogen or fluoro;
wherein M_1 is



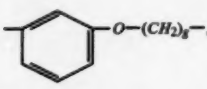
or

wherein R_5 is hydrogen or methyl;
wherein R_7 is $-(CH_2)_m-CH_3$, wherein m is one to 5, inclusive, cis—CH=CH—CH_2—CH_3, or



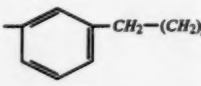
wherein T is chloro, fluoro, trifluoromethyl, alkyl of one to 3 carbon atoms, inclusive, or alkoxy of one to 3 carbon atoms, inclusive, the various T's being the same or different, s is zero, one, 2, or 3, with the proviso that not more than two T's are other than alkyl;
wherein Y_1 is trans—CH=CH—, $-CH_2CH_2-$, cis—CH=CH—, or —C≡C—; and
wherein Z_1 is
(1) cis—CH=CH—CH_2—$(CH_2)_g$—CH_2—,
(2) cis—CH=CH—CH_2—$(CH_2)_g$—CF_2—,
(3) cis—CH_2—CH=CH—$(CH_2)_g$—CH_2—,
(4) —$CH_2)_3$—$(CH_2)_g$—CH_2—,
(5) —$(CH_2)_3$—$(CH_2)_g$—CF_2—,
(6) —CH_2—O—CH_2—$(CH_2)_g$—CH_2—,

(7)



or

(8)



wherein g is one to 3 inclusive.

Re. 30,054

CONTROL DEVICE

Kian K. Ong, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

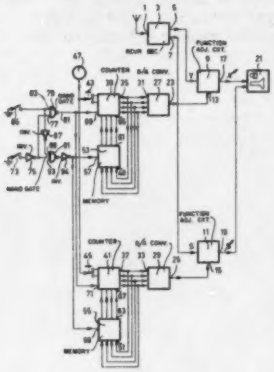
Original No. 3,980,955, dated Sep. 14, 1976, Ser. No. 564,790, Apr. 3, 1975. Application for reissue Feb. 24, 1977, Ser. No. 771,696

Claims priority, application Netherlands, Apr. 19, 1974, 7405304

Int. Cl.² H03K *25/00*

U.S. Cl. 325—390 **3 Claims**

1. Control device for adjusting at least one *gain factor of a* function, which device comprises a counter having a plurality of outputs, a digital-to-analog converter coupled to said outputs of the counter and having an output, a function adjustment circuit having an adjusting signal input coupled to said converter output, a control correction member means for immediately setting said counter into a selected state, a memory means coupled to said counter outputs for supplying the digital setting for said [desired] *selected* state *to said counter,*



and a write-in control member means for providing that information from said counter outputs is written into said memory.

Re. 30,055

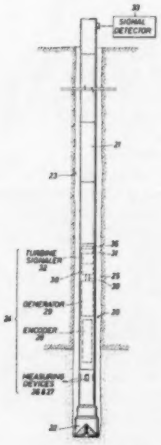
APPARATUS FOR TRANSMITTING WELL BORE DATA

Jackson R. Claycomb, Houston, Tex., assignor to Schlumberger Technology Corporation, New York, N.Y.

Original No. 3,949,354, dated Apr. 6, 1976, Ser. No. 470,081, May 15, 1974. Application for reissue Apr. 5, 1978, Ser. No. 893,569

Int. Cl.² G01V *1/40*

U.S. Cl. 340—18 LD **38 Claims**



1. Apparatus adapted for producing signals at the surface representative of at least one downhole condition occurring while drilling a borehole and comprising:
a body adapted to be tandemly coupled into a tubular drill string and defining a fluid passage for carrying drilling fluids being circulated to a borehole-drilling device dependently coupled therebelow;
data-signaling means on said body and including circuit means for producing digitally-encoded electrical data signals;
power-supply means on said body and including an electrical generator adapted to be rotatively driven for producing electrical power for said circuit means; *and*

impeller means coupled to said generator and cooperatively arranged in fluid passage for rotatively driving said generator upon flow of drilling fluids through said fluid passage and said impeller means; [and] *said impeller means including* signal-producing means [cooperatively arranged on said impeller means and] adapted for *at least* partially obstructing the flow of drilling fluids through said [impeller means] *fluid passage* in response to said electrical data signals to selectively produce correspondingly-encoded acoustic signals in drilling fluids circulating through said body.

PLANT PATENTS

GRANTED JULY 24, 1979

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

4,441

ROSE PLANT

H. A. Conklin, P.O. Box 365, McFarland, Calif. 93250

Filed Jul. 21, 1978, Ser. No. 927,615
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—2 **1 Claim**

1. A new and distinct variety of rose plant of the climbing hybrid tea class, substantially as herein shown and described, characterized particularly as to novelty by its general similarity to its parent variety, Patchwork (U.S. Plant Pat. No. 4,012), but different therefrom by its pronounced climbing growth habit.

4,442

FUCHSIA PLANT

James R. Shawver, 281 S. Job St., Virginia, Ill. 62691

Filed Jul. 5, 1978, Ser. No. 921,461
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—84 **1 Claim**

1. The new and distinct variety of fuchsia plant herein described and illustrated, characterized by the rose red sepals in combination with the lavender petals marked with rose red veins.

4,443

AFRICAN VIOLET NAMED BRILLIANT EVA

Maxiemillian J. Epp, Huttonville, Canada, assignor to Pan-American Plant Company, West Chicago, Ill.

Filed Aug. 30, 1978, Ser. No. 938,116
Int. Cl.[2] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of *Saintpaulia ionantha* substantially as herein shown and described, characterized by its medium violet-blue color when compared with its parent Eva.

PATENTS

GRANTED JUL. 24, 1979

ERRATA

For CLASS	See PATENT NO.
414–085	4,162,016
414–313	4,162,017
414–786	4,162,018
414–412	4,162,019
406–185	4,162,106
260–326.2	4,162,142
435–239	4,162,192
435–121	4,162,193
435–015	4,162,194
435–310	4,162,195
435–313	4,162,196
585–471	4,162,214
546–201	4,162,252
585–274	4,162,271
062–024	4,162,272
585–854	4,162,273
528–075	4,162,274
525–428	4,162,275
525–002	4,162,276
525–146	4,162,277
525–002	4,162,278
200–61.88	4,162,384
200–153 SC	4,162,385
200–239	4,162,386
307–362	4,162,416
354–155	4,162,498
364–200	4,162,519
364–200	4,162,520

PATENTS

GRANTED JULY 24, 1979

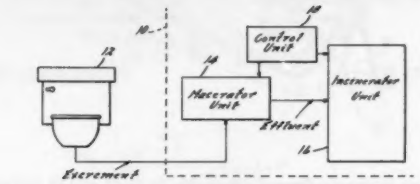
GENERAL AND MECHANICAL

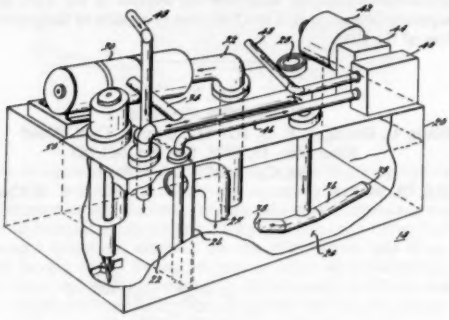
4,161,792

WASTE DISPOSAL SYSTEM AND METHOD

John A. Dallen, Port Clinton, Ohio, and Harry W. Green, Sarasota, Fla., assignors to The Standard Products Company, Cleveland, Ohio

Filed Nov. 3, 1976, Ser. No. 738,531
Int. Cl.[2] A47K *11/02*
U.S. Cl. 4—111.1 **54 Claims**





1. A portable system for disposing of human excrement comprising a maceration unit for converting the excrement to a liquified effluent and an incineration unit for incinerating said effluent; said maceration unit including a first storage means for storing said excrement, macerating means for macerating said excrement into a substantially liquified effluent, second storage means for storing said effluent, said first pumping means for drawing effluent from said second storage means and pumping said effluent through a circulation line to said incineration unit and back to said maceration unit; said incineration unit including a combustion chamber, a crucible disposed within said combustion chamber, a burner for introducing a high temperature flame into said combustion chamber, and controlled means for drawing from said circulation line a portion of the effluent circulating in said line and feeding said effluent into the crucible within said combustion chamber.

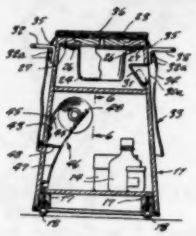
4,161,793

COMBINATION BATHROOM STOOL AND TOILET

Mercedes A. Merchan, 6846 Edgemoor, Houston, Tex. 77074, assignor to Mercedes Merchan, Houston, Tex.

Continuation-in-part of Ser. No. 621,023, Nov. 3, 1975, abandoned. This application Mar. 15, 1978, Ser. No. 886,784
Int. Cl.[2] A47K *11/02*; A61G *7/02*
U.S. Cl. 4—134 **5 Claims**

1. A combination bathroom stool and toilet device, comprising a hollow upwardly tapered body consisting of a frustoconical side wall, a circular top wall and a circular bottom wall, non-skid means upon an underside of said bottom wall for stationarily maintaining said device, caster means on an underside of said bottom wall for moving said device across a floor, a horizontal intermediate wall between said top and said bottom walls defining an upper and a lower chamber within said body, said top wall having a central, circular opening, so as to serve as a toilet seat, a pair of spaced apart channels on an underside of said top wall, a pot below said top wall opening having sidewardly extending ears slideably supported on said channels, an upper doorway on said side wall providing access into said upper chamber for sliding said pot outwardly of said



body, said doorway being closeable by a hinged door, a pair of U-shaped handle grips upon opposite sides of said body, an opening in said side wall fitted with an inwardly hollowed soap dish for holding soap, and a removable cushion placed upon said top wall, said cushion being integral with a skirt draped downwardly all around said body and enclosing a major portion of said body from view.

4,161,794

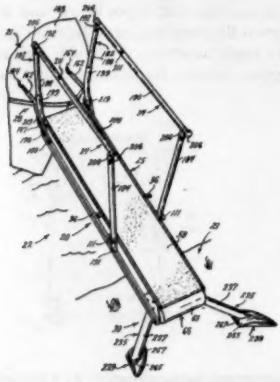
INFLATABLE CUSHION

Kristina E. Darnfors, Askim, Sweden, assignor to Bengt Petersson New Products Investment AB, Goteborg, Sweden

Filed Jun. 7, 1976, Ser. No. 693,180
Claims priority, application Sweden, Jun. 9, 1975, 7506543
Int. Cl.[2] A47G *9/00*; A47C *27/10*
U.S. Cl. 5—441 **2 Claims**

1. A substantially annular inflatable resting cushion having two ends and a middle section and comprising two sheets of a flexible material joined together along defining border lines which define the shape of the cushion, said cushion being divided into two separate inflatable compartments by a curved defining line in the middle section, each of said compartments having a reduced portion in overlapping relationship with the other of said compartments in said middle portion such that a radius passing through the middle section will pass through the reduced portion of each of the compartments.

4,161,795
BOAT RAMP
Roland G. Quest, 50 Woodcrest Dr., St. Louis, Mo. 63124
Filed Sep. 2, 1977, Ser. No. 830,094
Int. Cl.[2] E04C 3/02
U.S. Cl. 9—1.6 17 Claims



1. A ramp for allowing egress and ingress to and from a landing base and a boat having a deck comprising:

(a) a plank having a rear end to be supported near the boat and a front end to be supported near the base; and

(b) a foldable hand rail assembly comprising a pair of hand rails mounted on opposite sides of the plank, each rail mounted by a rear end brace bent so as to have an off-set lower segment, each lower rear brace segment being pivotally mounted to opposite sides of the plank, the tops of the rear braces being pivotally engaged near the rear ends of their respective hand rails, and each rail mounted by a front end brace pivotally mounted on opposite sides of the plank, each front brace being pivotally engaged to each rail near the front end of the rail, the braces being mounted to the plank at an angle so that when the braces pivot from a lowered position to an upright position they are tilted at an angle outwardly away from the sides of the plank to provide a passageway between the hand rails of greater width than the plank width; and

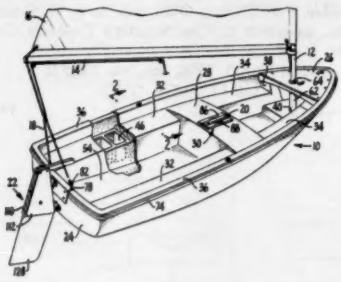
(c) means to adjustably mount the rear plank end to the boat comprising link chains having their lower ends secured to the plank near the rear end of the plank and their upper ends secured to the boat to allow the rear end of the plank to be supported a selected position beneath the level of the boat deck;

(d) means to latch the hand rail braces when they are in an upright position; and

(e) foldable legs pivotally mounted near the front end of the plank and extendable outwardly from the sides of the plank to support the front end of the plank on the landing base.

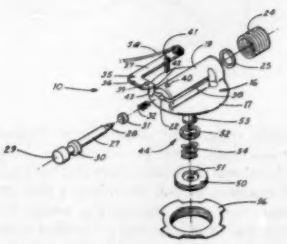
4,161,796
MONOLITHIC POLYMER FOAM SAILBOAT HULL
Andrew T. Kostanecki, Darien, Conn., assignor to Kransco Manufacturing, Inc., South San Francisco, Calif.
Filed Jun. 7, 1977, Ser. No. 804,321
Int. Cl.[2] B63B 3/00
U.S. Cl. 9—6 P 13 Claims

1. A sailboat hull comprising a monolithic structure of low-density polymer foam, said hull having integrally formed therewith a structural reinforcement core in the form of an internal H-shaped structure defining a cross member extending transversely across the hull and seat members extending along and disposed inwardly of the sides of the hull, said seat members terminating short of the bow of the hull, said cross member merging with the bottom and opposite sides of the hull and having a centerboard trunk formed therein, said seat members defining leg space therebetween and extending forwardly and rearwardly of the cross member and merging with the cross member and the sides and transom of the hull and said hull



having integrally formed therewith, in front and in merging relationship with the seats and the bottom of the hull, deck supports extending to a level in close proximity to the gunwale line of the hull.

4,161,797
DETONATOR ASSEMBLY
Harry G. Ruscigno, P. O. Box 164, Orange, Calif. 92669
Filed Mar. 15, 1976, Ser. No. 667,187
Int. Cl.[2] B63C 9/16, 9/24
U.S. Cl. 9—316 5 Claims



1. In a detonator assembly for mating a gas cartridge to an expandable chamber, said cartridge having a sealing diaphragm across one end thereof and said chamber having a wall, said detonator assembly being of the type including a body having first and second intersecting passageways therein, one end of said second passageway being adapted to receive said one end of said cartridge, a firing pin positioned for axial movement in said second passageway and having a diaphragm puncturing element at one end thereof positioned in facing relationship with said one end of said cartridge, means positioned within said body for biasing said firing pin with said one end thereof spaced from said one end of said cartridge, and manually operable means for moving said firing pin axially to puncture said sealing diaphragm of said cartridge, the improvement wherein:

said body has a planar flange on one side thereof and a threaded collar extending perpendicularly from one side of said flange, said collar being adapted to extend through a hole in said chamber wall, said first passageway extending through said collar for providing a fluid passageway into said chamber;

a nut positionable in said chamber for engaging said collar and sandwiching said chamber wall between said nut and said flange to connect said body to said chamber wall and

to provide a fluid-tight seal between said chamber and said first passageway in said body; and

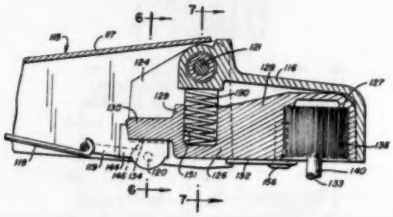
one-way valve means positioned within said first passageway in said body for permitting flow of the gas in said cartridge from said cartridge to said chamber via said first and second passageways and preventing escape of said gas from said chamber.

4,161,798

FINER ADJUSTMENT WINDSHIELD ARM MOUNTING HEAD

Michael G. Mohnach; William H. Harbison, both of Valparaiso, and Robert O. Wittwer, Portage, all of Ind., assignors to The Anderson Company, Gary, Ind.

Filed Apr. 1, 1977, Ser. No. 783,939
Int. Cl.[2] B60S *1/08, 1/26*
U.S. Cl. 15—250.13 **11 Claims**



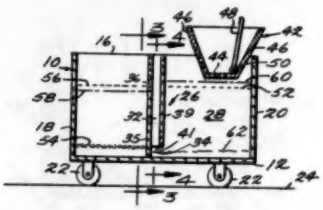
11. A wiper arm having a mounting head with a longitudinal axis, said mounting head having mounting means and fine adjustment means disposed therein, said mounting means and fine adjustment means having a longitudinal axis, a drive shaft having a drumhead mounted on one end portion, said drumhead having vertial fluting adapted to coact with said mounting means, spring means engaging said mounting head and said fine adjustment means for urging said head and said fine adjustment means into interlocking engagement, and means for positioning said mounting means and fine adjustment means relative to said drumhead and mounting head to orient said longitudinal axis of the mounting means and fine adjustment means relative to said longitudinal axis of the arm.

4,161,799

MOP CLEANING DEVICE

Weldon B. Sorrells, 830 Leigh Mill Rd., Great Falls, Va. 22066

Continuation-in-part of Ser. No. 462,076, Apr. 18, 1974, abandoned. This application Sep. 8, 1975, Ser. No. 611,244
Int. Cl.[2] A47L *13/14*
U.S. Cl. 15—260 **5 Claims**



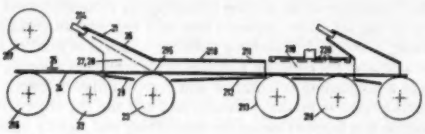
1. A mop cleaning device comprising: an open-top container having a bottom and an enclosing side wall; and vertical partition means within the container for dividing the interior of the bucket into first and second compartments, and for maintaining a predetermined liquid level in the first compartment and for permitting displacement of liquid from the lower end of the first compartment to the upper end of the second compartment when liquid is added to the upper end of the first compartment by wringing of a mop thereinto, said means forming a laterally enclosed upwardly extending passage communicating at its lower end with the first compartment only near the lower end portion thereof and communicating at its upper end with the second compartment near the upper end thereof, whereby liquid wrung from a mop into the first compartment displaces an equal amount of liquid upwardly from the lower end of the first compartment into the second compartment; and a mop wringer associated with said first compartment at a position in which liquid wrung from a mop drops into said first compartment, said wringer being located above the level of the upper end of said passage and being supported by said container, whereby wringing of a mop does not agitate the liquid in said first compartment.

4,161,800

APPARATUS FOR IMPROVING THE QUALITY OF STEEL SECTIONS

Mario Economopoulos, Liege; Yves J. Respen, Herstal, and Stephane H. Wilmotte, Liege, all of Belgium, assignors to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie, Brussels, Belgium

Division of Ser. No. 619,022, Oct. 2, 1975, abandoned. This application Sep. 19, 1977, Ser. No. 834,327
Claims priority, application Belgium, Oct. 4, 1974, 820750
Int. Cl.[2] C21D *9/54*
U.S. Cl. 15—302 **1 Claim**



1. An apparatus for improving the quality of a steel section at the outlet of a section rolling mill, the apparatus comprising: a container forming a reservoir of a cooling fluid and having one wall perforated by orifices for atomizing and directing the cooling fluid onto a flat surface of a rolled section being displaced past the perforated wall; and means for supplying the cooling fluid connected to the container; said container comprising, arranged one after the other:

(a) a first enclosure comprising means for water-cooling the rolled sections, and

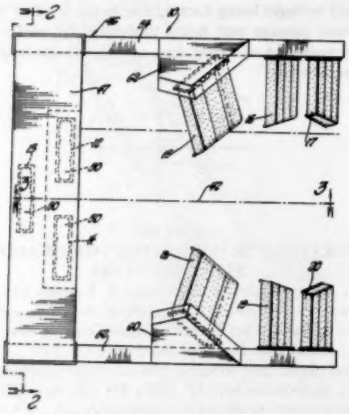
(b) an air-drying enclosure comprising means for removing from the section water applied to it while passing through the first enclosure;

said first enclosure comprising a case having two distinct portions, a first portion on the inlet side of the section, said first position having a height decreasing down to a root of said case which is directly above the upper generatrix of a roller, the upper part of this roller being located inside the case owing to the presence of an opening in its bottom wall, a second portion having a roof substantially horizontal with respect to the plane taken taken as a reference plane for the section going through the case, the bottom walls of the two portions of the case, one being arranged before the roller and the other after the roller, being slightly inclined towards the roller without touching it; and on the inlet side of the section said means for water cooling comprises a device arranged to eject water onto the upper part of the section substantially in the direction of the zone where the section, assumed to be plane, contacts the roller, the roller carrying the section and conveying the section towards the outlet of the container.

4,161,801
FLUID STRIPPING APPARATUS

David R. Day, 637 Princeton Rd., Berkely, Mich. 48072, and Lucian G. McElroy, 3315 Brocker Rd., Metamora, Mich. 48455

Filed Mar. 16, 1978, Ser. No. 887,040
Int. Cl.[2] B60S 3/04
U.S. Cl. 15—316 R 14 Claims



1. An apparatus for stripping fluids from the surface of an object comprising: a flexible, inflatable bag of generally rectangular transverse cross section including an elongated inlet for introducing air under pressure into said bag and an elongated opening at one end of said bag defining a nozzle of smaller area than said inlet for emitting a stream of air while maintaining the bag in a nonflailing orientation and rigidly inflated; means for effecting relative motion between said bag and the object to be stripped; and support means for supporting said rigidly inflated bag so that it extends toward the object and wherein the nozzle end of said bag lies in the path of motion of the object as said bag is rigidly inflated to cause physical engagement between the nozzle end of said bag and the object to bring the stream of air emitted from said nozzle opening into close spacial relationship with the surface of the object, said nozzle being orientated to direct the stream of air in a direction to strip the object as the bag is rigidly inflated.

4,161,802
DRAPERY AND DRAPERY PLEAT CLEANING TOOL HEAD

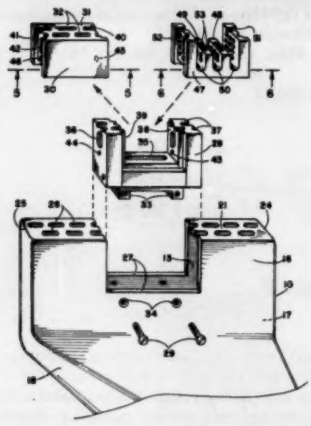
Arlen M. Knight, 1141 N. Patterson, and William R. Hachtmann, 5072 Walnut Park Dr., both of Santa Barbara, Calif. 93111

Filed Apr. 10, 1978, Ser. No. 894,703
Int. Cl.[2] A47L 9/02
U.S. Cl. 15—331 6 Claims

1. A drapery and drapery pleat cleaning tool head assembly for connection to a vacuum hose extending from a cleaning machine, said tool head assembly including, in combination:

(a) a housing comprised of wide front ended top and bottom walls spaced relatively close together with left and right side walls converging towards each other in a rearward direction to merge with narrowed rear end portions of said top and bottom walls into a cylindrical portion having a rear end opening for connection to said vacuum hose, and an elongated front wall extending between the front ends of the top, bottom, left and right side walls, said front wall having a plurality of openings communicating with the interior of the housing to provide a front suction surface for engaging drapery material, a portion of said elongated front wall and corresponding extending portions of said top and bottom walls intermediate the front ends of said side walls defining a cut-out; and

(b) insert receiving means secured in said cut-out for mounting in operative position different inserts whereby a first insert can be received in said insert receiving means, with a front wall portion flush with said elongated front wall on either side of said cut-out and with openings positioned to provide continuity with the openings in said front wall to define a continuous suction surface between the front ends of the left and right side walls for efficient cleaning of depending drapery material; or whereby a second insert

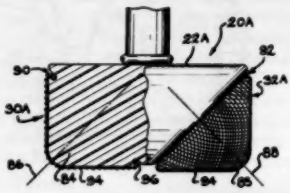


can be received in said insert receiving means with an undulating front wall portion defining transverse fins with channels therebetween, the side walls and front tips of the fins, and floors of the channels having openings connecting with the interior of the housing, so that pleated portions of drapes may be received in said channels between the fins and end channel walls to enable the pleat surfaces and inner folds of the pleats to be subject to suction and thereby cleaned while portions of the drapes on either side of the pleated material are cleaned by the portions of the elongated front wall on either side of said cut-out.

4,161,803
CASTER

Robert L. Propst, 2347 Londonderry, and Paul L. Propst, 2490 Laurelwood, both of Ann Arbor, Mich. 48104

Filed Dec. 12, 1977, Ser. No. 859,319
Int. Cl.[2] B60B 33/00
U.S. Cl. 16—18 A 3 Claims



1. A low profile caster particularly adapted for rolling support on a carpet having carpet fibers, said caster comprising a body having an upright spindle, a pair of extension members formed on said body on opposite sides of said spindle, rollers rotatably mounted on said extension members, each of said rollers comprising a flexible boot fitted over one of said extension members and slidably engaged therewith, each of said boots slidably rotating on one of said extension members about

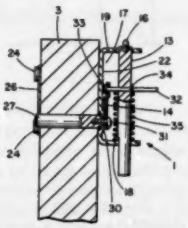
an axis of rotation inclined with respect to said spindle in response to movement of said caster on said carpet, each of said boots having an outer surface engageable with said carpet and diverging away from said axis, bottom portions of said surfaces of said boots being positioned on opposite sides of and equidistant from said spindle so as to be centered therewith.

4,161,804

HEAT-ACTUATED DOOR LATCH

Richard E. D'Hooge, Wood Dale, and Frank S. Pasek, Westchester, both of Ill., assignors to Rixson-Firemark, Inc., Franklin Park, Ill.

Filed Dec. 21, 1977, Ser. No. 862,723
Int. Cl.[2] E05F *15/20*
U.S. Cl. 16—48.5 **6 Claims**



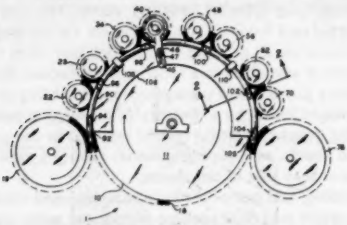
1. A heat-actuated door latch adapted for mounting on or near a door to latch the door closed, comprising; an integral fusible element separable when subjected to intense heat, a heat conducting element fixed to a first portion of the fusible element and shaped to extend completely through a door, latching means, supporting means carrying the latching means for latching movement, means coupling a second portion of the fusible element to the latching means to retain the latching means in an unlatched position, and latch force means exerting a latching force upon the latching means which releases the latching means to effect a latch in response to the separation of the fusible element.

4,161,805

PROCESS AND APPARATUS FOR CARDING FIBERS

Nathan T. Worley, Seneca, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 15, 1978, Ser. No. 878,098
Int. Cl.[2] D01G *15/02*
U.S. Cl. 19—98 **21 Claims**



1. A method comprising:

carding staple fibers on a carding machine comprising a main cylinder roll having a cylindrical surface and a first end and a second end wherein said staple fibers form a web on the main cylinder roll, said web having a first edge positioned adjacent the first end and a second edge positioned adjacent the second end, and

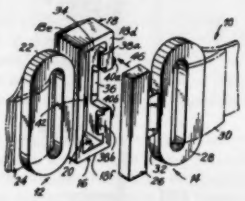
forming at least one gaseous barrier near at least said first end by directing a pressurized gas primarily toward said cylindrical surface adjacent said first end at a pressure sufficient to maintain the first edge of the web a distance from the first end of the main cylinder roll.

4,161,806

SNAP FASTENER

Bonnie C. Hennisse, Miami, Fla., and Synde Cousins, New York, N.Y., assignors to Bonnie Enterprises, Inc., New York, N.Y.

Filed Mar. 24, 1977, Ser. No. 780,593
Int. Cl.[2] A44B *17/00*
U.S. Cl. 24—201 A **38 Claims**



1. A fastener for releasably joining two associated parts to each other, comprising a female member having a first connecting means for connecting said female member to one of the associated parts, and having a socket portion; a male member having a second connecting means for connecting said male member to the other one of the associated parts and having an insert portion, said insert portion being dimensioned and configurated to be removably receivable within said socket portion with little relative clearance, said first and second connecting means being securely attached to the respective ones of said portions and being adapted to be gripped to disengage said portions without applying excessive stresses to the associated parts, said socket portion forming a substantially hollow housing having an aperture in a side wall and having fenestration means in a face wall of said housing for exposing the interior thereof, and said insert portion comprising a tab dimensioned and configurated to substantially correspond to the configuration and dimension of the interior of said hollow housing so as to be receivable therein by passage through said fenestration means, at least one of said portions being provided with retaining means in the form of a plurality of protuberances, some of which are on one side of said side wall projecting inwardly of said fenestration means and on the other side of said side wall projecting in a direction away from said fenestration means and in a direction of said second connecting means, so that said retaining means releasably retaining the other of said portions during engagement therebetween of said socket and insert portions, said insert portion being snappingly receivable into said socket portion by deforming at least one of said portions and said retaining means.

4,161,807

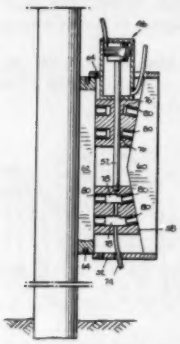
APPARATUS AND METHOD FOR LOCKING LOAD SUPPORTING STRUCTURES TOGETHER

William J. Swenson, Houston, Tex., assignor to Raymond International, Inc., Houston, Tex.

Filed Sep. 28, 1977, Ser. No. 837,623
Int. Cl.[2] A44B *21/00*
U.S. Cl. 24—263 SW **23 Claims**

23. Apparatus for locking two load supporting members together comprising: a surface on one of said members converging relative to a facing surface on the other of said members, wedge means between said members and having a first surface facing said converging surface, means adapted to move said wedge means along said converging surface in a converging direction, gripping means movable toward said other of said members upon movement of said wedge means said wedge means having a second surface facing a surface of said gripping

means, recesses being formed between a surface of said wedge means and said converging surface and between a surface of said wedge means and a surface of said gripping means, sleeve means telescopically disposed in each recess and having an end engaging the respective surface facing said recesses, and pressure means for establishing a positive fluid pressure substantially in excess of ambient pressure in said recesses when said wedge means move along said converging surface, said sleeve means being so arranged relative to said recesses and said converging surface and gripping surface as to retard the escape of said pressurized fluid between said wedge means and the respective surfaces facing said recesses.



4,161,808

MACHINE FOR CUTTING CONTINUOUS SHEET MATERIAL

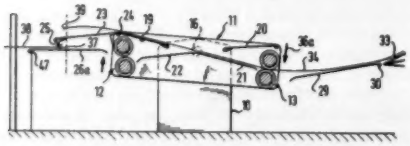
Gerhard Wittstock, Pinneberg, Fed. Rep. of Germany, assignor to Werner H.K. Peters Maschinenfabrik G.m.b.H., Hamburg, Fed. Rep. of Germany

Filed May 12, 1978, Ser. No. 905,357

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722233

Int. Cl.[2] B23P *23/00*; B23D *19/00*

U.S. Cl. 29—33 R **26 Claims**



1. A machine for longitudinally cutting and grooving continuous sheet material, said machine including a first longitudinal cutting and grooving station, a second longitudinal cutting and grooving station, means for cutting and grooving said sheet material at each of said stations, means for feeding sheet material in a predetermined direction through said machine, means mounting said stations spaced apart in said predetermined direction, whereby, in operation, said sheet material first passes said first station and then passes said second station, means for moving said stations upwardly and downwardly between working and inoperative positions, a device for cutting said continuous sheet material transversely into sections, said working positions of said first station and said second station lying in a common plane and said feed means being operative to feed said sheet material along said common plane, a first guide device for guiding said sheet material associated with said first station, another first guide device for guiding said sheet material associated with said second station, said first guide devices of both said stations being disposed on one side of said common plane when said station with which said guide device is associated is in the working position thereof, a second guide device, means mounting said second guide device between said first station and said second station, said second guide device being directed towards said cutting and grooving means of said second station both when said second station is in said working position thereof and in said inoperative position thereof, a third guide device and means mounting said third guide device between said first station and said second station, said third guide device being directed towards said cutting and grooving means of said first station both when said first station is in the working position thereof and in the inoperative position thereof.

4,161,809

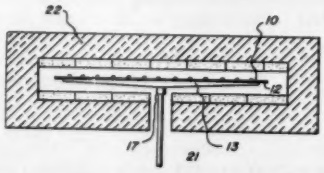
METHOD OF FABRICATING A SOLAR ABSORBER PANEL

Ashjorn M. Severson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 26, 1977, Ser. No. 836,804

Int. Cl.[2] B23P *15/26*

U.S. Cl. 29—157.3 D **6 Claims**



1. A method of fabricating a solar flat plate absorber panel comprising the steps of:

providing a pair of sheets of structural metal including a first sheet having a plurality of juxtaposed elongated grooves formed therein and a second sheet provided with a pair of substantially parallel grooves across the end portions thereof and having openings therein for the provision of inlet and outlet accesses thereto such that when the pair of sheets is assembled in a superimposed fashion the grooves form a distinct fluid passage system consisting of manifold passages joined by a plurality of connecting passages;

placing suitable metallic sealant material in the grooves of said sheets, said sealing material having a melting point lower than that of the sheets;

assembling said pair of sheets in superimposed configuration to create said fluid passage system and seam welding the periphery of said assembled pair of sheets to produce a fluid tight envelope having a hollow internal passage network;

purging said internal passage system of air by flowing a non-oxidizing gas therethrough; and

partially evacuating said internal volume of said envelope while heating said envelope thereby maintaining said non-oxidizing gas therein at reduced pressure in a manner which causes said sealant to melt and fill the peripheral junctures of said passages.

4,161,810
METHOD OF WITHDRAWING ELONGATE TUBULAR MEMBERS

James H. Beard; Cyril Lea, and Bernard W. Ludwig, all of Melton Mowbray, England, assignors to The Production Engineering Research Association of Great Britain, Melton Mowbray, England

Division of Ser. No. 651,811, Jan. 23, 1976, Pat. No. 4,106,177. This application Jan. 17, 1978, Ser. No. 870,212

Claims priority, application United Kingdom, Jan. 24, 1975, 3106/75; Jan. 24, 1975, 3107/75; Aug. 22, 1975, 34891/75; Aug. 23, 1975, 35110/75

Int. Cl.[2] B23P *19/02*

U.S. Cl. 29—427 9 Claims

1. A method of withdrawing an elongated tubular member from a bore in a support member and simultaneously re-shaping said bore for receiving a replacement tubular member, comprising the steps of fixing at a leading end of said tubular member a hollow adapter means constituting when so fixed an extension of said tubular member, inserting through the tubular member and the hollow adapter means a rod having an overall length greater than the combined length of the tubular member and the adapter means, securing said rod to the adapter means in the region of the leading end of the tubular member, securing a broach to the rod at the region of a trailing end of the tubular member, pulling the tubular member in an axial direction by suitable gripping means operating at least initially on said adapter means to withdraw the tubular member from the bore and thereby drawing the broach through the bore to re-shape it.

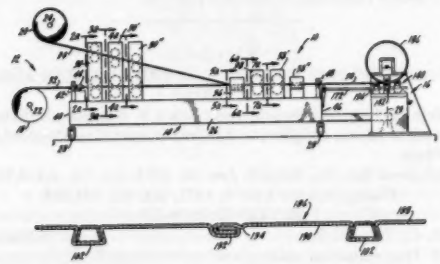
4,161,811
METHOD AND APPARATUS FOR THE MANUFACTURE OF REINFORCED SMOOTH FLOW PIPE

James Nyssen, 10045 Kenswood Dr., Chilliwack, British Columbia, Canada

Filed Mar. 13, 1978, Ser. No. 885,662

Int. Cl.[2] B23P *19/00, 19/04*

U.S. Cl. 29—429 13 Claims



1. Apparatus for manufacturing reinforced, spirally wound pipe having a generally smooth inner wall from an elongated flat sheet of ductile material and one or more narrow strips of ductile material, comprising

a. rolling means for continuously forming one longitudinal, generally trapezoidal reinforced impression in the elongated flat sheet corresponding to each of the narrow strips, said rolling means having an entry end for acceptance of said flat sheet and an exit end for issuing the reinforced sheet, and consisting essentially of

i. means to form one longitudinal, generally rectangular channel in the sheet corresponding to each of said narrow strips,

ii. means to shape each narrow strip into a reinforcement element having a first continuous portion of a lesser width than the width of said rectangular channels and a second continuous portion comprising a pair of splayed legs extending from the outer edges of said first portion,

iii. means to insert each of said strips into a corresponding one of said rectangular channels, and

iv. means to close the walls of each of said channels about said strips to form said trapezoidal impressions,

b. a forming device proximate said exit end for continuously curling said reinforced sheet into adjacent, helical convolutions, and

c. means to join said adjacent convolutions.

10. A method of manufacturing reinforced, spirally wound pipe with a generally smooth inner wall from an elongated continuous sheet of ductile material and at least one continuous, narrow strip of ductile material, comprising the successive steps of

a. forming one longitudinal, rectangular channel in said sheet corresponding to each of said strips of ductile material,

b. shaping each of said strips into reinforcement elements having a first continuous portion of a lesser width than the width of said channel and a second continuous portion comprising a pair of splayed legs extending from the outer edges of the first portion, the height of each of said shaped strips being no greater than the depth of said channels,

c. inserting each reinforcement element into a corresponding one of said rectangular channels,

d. closing each of said channels about said elements to form longitudinal, reinforced impressions in the elongated sheet which have a trapezoidal cross-section, and

e. curling said sheet into convolutions having said impressions forming ribs in the exterior wall of said convolutions.

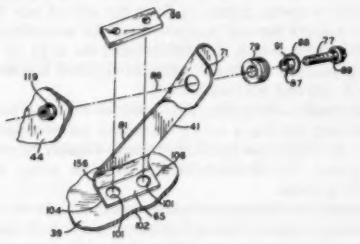
4,161,812
METHODS OF SECURING TORSIONALLY FLEXIBLE MOTOR MOUNTING ARRANGEMENTS TO SUPPORTS THEREFOR

Ernest W. Litch, III, Ft. Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 636,547, Dec. 1, 1975, Pat. No. 4,063,060. This application Sep. 1, 1977, Ser. No. 829,662

Int. Cl.[2] B23P *11/02*

U.S. Cl. 29—446 12 Claims



1. A method of mounting a motor to a motor support so that the motor will be torsionally flexible relative to the support, and wherein the motor is inflexibly interconnected with a first end of at least two torsionally flexible leaf spring mounting arms that are self-supporting unitary structural members, each having at least one mounting hole at a second end thereof remote from the motor; said method comprising aligning a mounting hole at the second end of a first one of the torsionally flexing mounting arms with a first mounting location on the motor support, and tightening a first fastener at the first mounting location while the fastener is accommodated in the mounting hole in the arm; flexing at least one other torsionally flexi-

ble mounting arm to align the mounting hole therein with another mounting location on the motor support; and tightening another fastener at the another mounting location while the another fastener is accommodated in the mounting hole in the other torsionally flexible mounting arm.

4,161,813

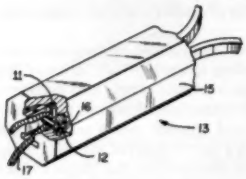
METHOD OF STRING ATTACHING TO GAME RACKET HANDLE

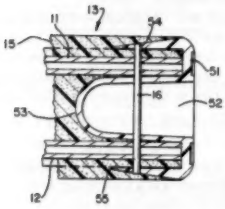
Mark L. Robinson, Andover, Mass., assignor to Acro, Inc., Stoneham, Mass.

Continuation-in-part of Ser. No. 800,660, May 26, 1977, abandoned. This application Feb. 15, 1978, Ser. No. 878,087

Int. Cl.[2] B23P *3/00, 19/04*

U.S. Cl. 29—460 **7 Claims**





1. A method of making the game racket handle of a game racket having a frame with a handle portion comprising opposed legs, pin means connected between said opposed legs in said handle portion near the end thereof for accommodating a handle string looped thereover, said handle portion comprising additional material between and around said opposed legs and formed with a cavity extending from the end of said handle portion to slightly beyond said pin means for accommodating said handle string, which method includes the steps of,

inserting said pin means through said opposed legs near the end of said end portion,

and inserting initially flowable material between said opposed legs leaving a cavity extending between said legs from the end of the handle portion to slightly beyond the pin means for accommodating a handle string in said handle portion.

6. A method of making the game racket handle of a game racket having a frame with a handle portion comprising opposed legs, pin means connected between said opposed legs in said handle portion near the end thereof for accommodating a handle looped thereover, said handle portion comprising additional material between and around said opposed legs and formed with a cavity extending from the end of said portion to slightly beyond said pin means for accommodating said handle string, which method includes the steps of,

inserting a cap means formed with a protrusion in said cavity open at the end of said handle portion,

inserting initially flowable material between said opposed legs and said cap means leaving a cavity extending between said legs from the end of the handle portion to slightly beyond the pin means for accommodating a handle string,

and inserting said pin means through said cap means and said opposed legs near the end of said handle portion.

4,161,814

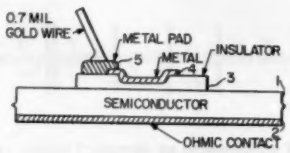
TUNNEL INJECTION OF MINORITY CARRIERS IN SEMI-CONDUCTORS

Joseph M. Ballantyne, Ithaca, N.Y., assignor to Cornell Research Foundation, Inc., Ithaca, N.Y.

Division of Ser. No. 638,406, Dec. 8, 1975, Pat. No. 4,065,780. This application Oct. 28, 1977, Ser. No. 846,490

Int. Cl.[2] B01J *17/00*

U.S. Cl. 29—580 **12 Claims**



MIS STRUCTURE

1. A method of fabricating a multilayer thin film device having adjacent insulator and semiconductor layers to produce an energy-band configuration which provides improved tunnel-injection of minority carriers through the semiconductor-insulator interface of said device, comprising:

forming a semiconductor substrate having an upper and a lower surface;

chemically etching said semiconductor substrate;

cleaning the upper surface of said semiconductor substrate in an oil-free, ion-pumped vacuum to free said upper surface of oxides and contaminants; and

depositing an insulator material on said cleaned upper surface while maintaining said vacuum to produce a thin insulator region adjacent the semiconductor-insulator interface, the cleaning of said upper surface and the subsequent deposition of an insulator material thereon creating an electric charge close to the semiconductor-insulator interface, such electric charge producing and maintaining a depletion region in said semiconductor substrate adjacent said semiconductor-insulator interface to substantially suppress tunneling of majority carriers and to enhance tunneling of minority carriers.

4,161,815

METHODS FOR MAKING ELECTRICAL CELLS AND BATTERIES

Edwin H. Land, Cambridge, and Gordon F. Kinsman, Billerica, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 811,472, Jun. 30, 1977, Pat. No. 4,124,742. This application Dec. 8, 1977, Ser. No. 858,685

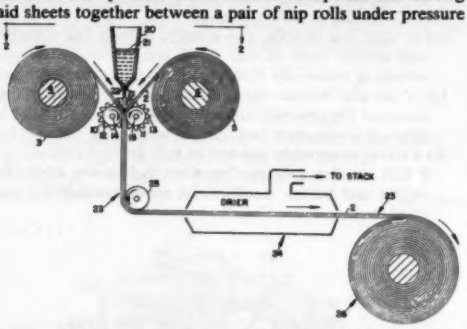
Int. Cl.[2] H01M *6/00*

U.S. Cl. 29—623.4 **8 Claims**

1. The method of making a subassembly useful in the manufacture of laminar batteries from a conductive plastic sheet to which electrode patches have been adhered, comprising the steps of passing said plastic sheet with said electrode patches adhered thereto and a sheet of cellophane together through a pair of nip rolls under pressure with said patches confronting said sheet of cellophane while supplying an aqueous composition containing a bonding agent to said sheets in the nip between said rolls, and drying the laminate so produced.

4. The method of making a laminate useful in the manufacture of batteries from a sheet of cellophane and a sheet of conductive plastic on one side of which there are electrode patches, comprising providing a sheet of conductive plastic

with electrode patches and a sheet of cellophane and feeding said sheets together between a pair of nip rolls under pressure



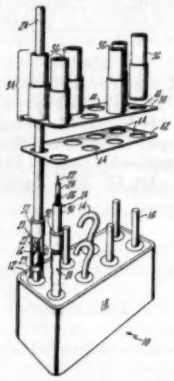
while supplying an aqueous composition containing a bonding agent to the nip between said rolls.

4,161,816

METHOD OF MAKING RELAY AND RF ADAPTOR ASSEMBLY

Paul A. Frano, Windsor Locks; Robert W. Bowman, Enfield; Donald F. Drapeau, Windsor, and Marino Kain, Bloomfield, all of Conn., assignors to Hi-G, Incorporated, Windsor Locks, Conn.

Division of Ser. No. 631,874, Nov. 14, 1975, Pat. No. 4,109,222. This application Dec. 27, 1977, Ser. No. 864,833
Int. Cl.[2] H01R *43/00*
U.S. Cl. 29—628 **6 Claims**



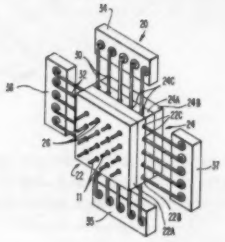
1. A method of making a miniature radio frequency relay assembly comprising the steps of mounting a plurality of radio frequency signal-carrying pins in a predetermined layout on an electrically conductive relay header with each pin projecting externally from the header for connection to a coaxial cable, forming a radio frequency adaptor as a one-piece component separate from the header by interconnecting tubular shells providing at least as many openings as there are radio frequency signal-carrying pins with the openings formed in a pattern corresponding to the RF signal-carrying pin layout ont the header, and securing the one-piece RF adaptor as an integral unit in electrically conductive relation to the relay header with each header pin received within the opening of a complementary shell, whereby the shells of the adaptor unit are made common with electrical ground and serve as radio frequency shields.

4,161,817

METHOD AND APPARATUS FOR MAKING A SEMICONDUCTOR DEVICE MOUNTING ELEMENT EMBODYING AN EMBEDDED FAN-OUT WIRE ARRANGEMENT

Edward T. Bernardo, Endicott; Louis H. Faure; Alfred H. Johnson, both of Poughkeepsie, and Donald G. Pittwood, Owego, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 31, 1978, Ser. No. 892,048
Int. Cl.[2] H01R *9/00*
U.S. Cl. 29—630 B **11 Claims**



1. A method of fabricating a semiconductor device mounting element for providing a fan-out I/O terminal attachment comprising,

supporting a plurality of insulated wires in a spatial parallel arrangement of columns and rows between two spaced apertured flat die elements,

engaging said wires at a first location between said die elements and uniformly reducing the spacing in a first direction between the wires at only a first location maintaining the an arrangement of columns and rows,

compacting said wires in a direction transverse to said first direction at a second location adjacent the said first location while maintaining an arrangement of columns and rows,

forming an enclosure about the wire portions positioned between one of said die elements and said second location,

injecting an organic hardenable resin material into said enclosure thereby encapsulating the wires positioned within,

severing the wires adjacent said second location, and

severing the wires adjacent said die element, and removing the die.

4,161,818

FOLDING POCKET KNIFE HAVING REPLACEABLE BLADES

Paul S. Phelps, Maryville, Tenn., assignor to Star Sales Company, Knoxville, Tenn.

Filed Feb. 6, 1978, Ser. No. 875,579
Int. Cl.[2] B26B *1/04, 5/00*
U.S. Cl. 30—157 **7 Claims**

1. A pocket knife which can be readily disassembled for purposes of cleaning and substituting blades comprising:

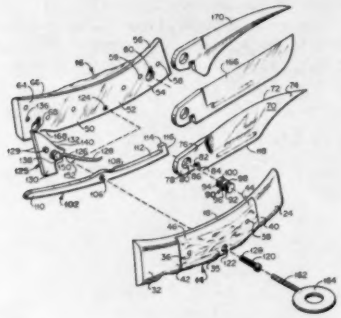
a case including first and further cooperating members which are releasably secured to each other,

a blade pivotally mounted at one of its end in said case between said first and further cooperating members,

a first spring member, said first spring member being elongated and definng a first end portion and a further end portion, said first spring member defining an opening therethrough between said first and further end portions for pivotally mounting said first spring member between said first and further case members; and

a spring mount carried by said case and serving to secure said first and further case members together, said spring mount carrying a further spring member, said further spring member engaging said further end portion of said

first elongated spring member, and said first end portion of said elongated spring member engaging said end portion



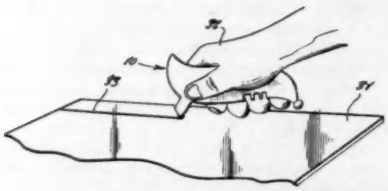
of said blade proximate said opening to assist in maintaining said blade in its opened and closed positions upon movement of said blade to such positions by an operator.

4,161,819

GLASS CUTTER

Frank Pietrantonio, 2215 Gunther Ave., Pelham Gardens, N.Y. 10469

Filed Mar. 3, 1978, Ser. No. 882,980
Int. Cl.[2] B26B *25/00*; C03B *33/10*
U.S. Cl. 30—164.95 **4 Claims**



1. A glass cutter comprising an S-shaped handle having in its working position an upturned front end and a downturned back end to define concave gripping surfaces respectively on its top edge adjacent the front end and on its bottom edge adjacent the back end, a carrier foot extending downwardly from the lower edge of the handle at a point rearwardly of the front end and substantially beneath the concave upper gripping surface, and a cutting wheel disposed at the lower end of the depending carrier foot.

4,161,820

APPARATUS FOR CUTTING VEGETATION

James L. Moore, Houston, Tex., assignor to Weed Eater, Inc., Houston, Tex.

Filed Oct. 28, 1977, Ser. No. 846,288
Int. Cl.[2] A01D *55/18*; A01G *3/06*
U.S. Cl. 30—276 **16 Claims**

1. An apparatus for cutting vegetation, comprising:

(a) a head rotatable about an axis of rotation with an integral drive connection carried on a first face and a second face having a smooth surface free of projections and recesses capable of trapping appreciable vegetation, and said head having an open-ended cavity with a smooth cylindrical wall coaxial to the rotational axis;

(b) a spool mounted in said cavity and having spaced-apart flanges defining a storage zone for cutting line, said flanges provided with two circular peripheries adapted to be journaled snugly within said cylindrical wall, and said spool having an axial opening;

(c) at least one flexible, non-metallic cutting line coiled in said storage zone of said spool and having a free end extending outwardly from said head into a cutting plane;

(d) a circular button member carried on said head and mounted for manually-induced axial movement from an outward station into said head to an inward station;

(e) a cover removably secured to said head to contain said button member and spool member and biasing means for urging said button member and spool towards the outward station;

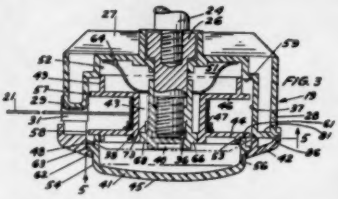


FIG. 3

(f) said cover, button member and spool having internested cylindrical bearing surfaces spaced intermediate of said axial opening and said cylindrical wall, said bearing surfaces forming low-friction journal means for common rotation relative to one another and said rotational axis; and

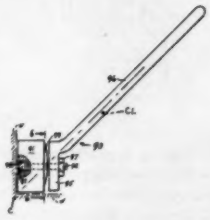
(g) locking means on said head and received within said central axial opening of said spool, said locking means adapted to be activated by said button member in the inward station for releasing said spool for rotation within said head through a predetermined angular displacement for extending a certain length of cutting line from said head into said cutting plane whereat said locking means secure said spool against rotation relative to said head.

4,161,821

SCRIBING TOOL FOR MARKING WALL PANELS FOR CUTTING TO FIT THE CONTOUR OF A WALL CORNER

Charles W. Miller, 814 N. 8th St., Springfield, Ill. 62702

Continuation-in-part of Ser. No. 680,468, Apr. 26, 1976, abandoned. This application Oct. 13, 1977, Ser. No. 841,739
Int. Cl.[2] B43L *13/02*
U.S. Cl. 33—41 R **6 Claims**



1. A scribing tool for marking a being-installed wall panel for cutting said panel to fit the contour of a wall corner, said tool comprising: a roller disc having a cylindrical peripheral surface and having a flat surface perpendicular to the axis of said cylindrical surface, a shaft journaled in an axial bore in said disc and carrying a scribing point protruding axially at least slightly beyond said flat surface for marking a cut-guiding line on a panel held flatwise against one wall with said panel's edge close to the corner defined by said one wall and by another intersecting wall at right angle thereto when said flat face of said disc is pressed against said one wall and said cylindrical surface is rolled against said another wall, and a manipulating

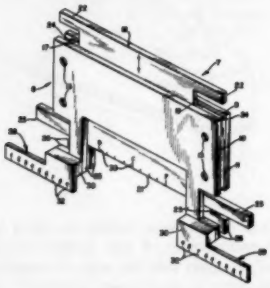
handle fixed to said shaft at an angle of approximatley 45 degrees to the axis of said shaft and with its center line oriented during a scribing operation to pass close to the intersection line of said walls for firm-pressure engagement therewith.

4,161,822

SKATE BLADE ANALYZER

Norman R. Ayvazian, 1 Patriots Cir., Woburn, Mass. 01801

Filed May 30, 1978, Ser. No. 910,848
Int. Cl.[2] G01B *5/00, 3/14*
U.S. Cl. 33—174 R 6 Claims



1. An ice skate blade analyzer comprising a support having foot members provided with coplanar bottom surfaces adapted to rest on an inverted ice skate blade holder and to straddle a part of the blade extending upwardly from the holder, said support having a slot disposed above and between the foot member, a slide member mounted in said slot and disposed substantially parallel to the blade for movement toward and away from the blade edge, said slide having a bottom edge disposed substantially parallel to the bottom surfaces of said foot members, means carried by said foot members for indicating when said support is centered relative to the blade holder supports, and means carried by said slide, adjacent to its bottom edge, for indicating the location of the tangent or high point of the blade edge which contacts said bottom edge of the slide member.

4,161,823

CIRCUMFERENCE MEASURING GAUGE

Terrence Collins, Whitburn, England, assignor to American Filtrona Corporation, Richmond, Va.

Filed Jan. 6, 1978, Ser. No. 867,448
Claims priority, application United Kingdom, Jan. 7, 1977, 596/77
Int. Cl.[2] G01B *3/10, 5/08*
U.S. Cl. 33—179 9 Claims

1. A measuring gauge comprising, in combination:

a tape including an intermediate portion forming means defining a closed loop with its two end portions extending away from the loop in opposite directions;

two mounting members, one fixed relative to each end portion of said tape, one mounting member being fixed and the other being mounted for movement towards and away from the said one member to increase or decrease the loop circumference;

means responsive to the distance apart of two datum points, one fixed relative to each mounting member, to indicate the size of said loop;

means resiliently biasing said other mounting member away from said one mounting member to tighten said loop;

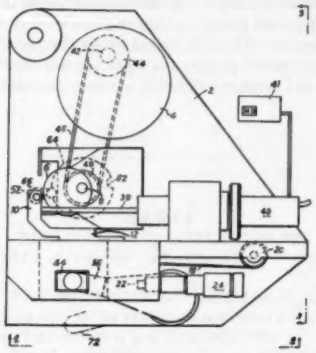
cam means having a cam surface;

a cam follower attached to said other mounting member in operative relationship with said cam surface;

means mounting said cam means for rotation with said cam surface and cam follower in engagement successively and alternately to move said other mounting member towards said one mounting member against said resilient bias to relax said loop for acceptance or release of a test rod and then to permit said resilient bias to move said other mounting member away from said one mounting member to tighten said loop around a test rod disposed therethough;

motor means operatively associated with said cam means to effect said rotation of said cam means, and

control means operable to actuate and deactuate said motor means in a measuring cycle, said control means comprising first sensing and actuating means operative to sense insertion of a test rod through said loop when relaxed and thereupon to actuate said motor means to rotate said cam means from a start position in which said cam surface



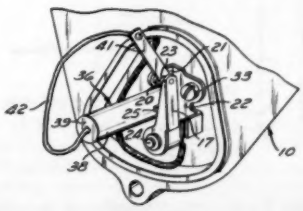
engages said cam follower to maintain said loop relaxed against said resilient bias to an intermediate position in which said loop is tightened around said test rod under said resilient bias, second sensing and actuating means operative to sense said cam means in said intermediate position and thereupon to deactuate said motor and actuate a timing means, said timing means being operative after a predetermined measuring interval to reactuate said motor means to rotate said cam means directly to said start position, to relax said loop and release said test rod, and third sensing and deactuating means operative to sense the release of said rod and thereupon to deactuate said motor with said cam means in said start position.

4,161,824

GAP SETTING MEANS

Jerry Riha, Mentor, Ohio, assignor to Robert K. Elder, Twinsburg, Ohio

Filed Sep. 8, 1977, Ser. No. 831,359
Int. Cl.[2] G01B *3/30*
U.S. Cl. 33—180 AT 1 Claim



1. A method of adjusting the gap of a set of ignition breaker contact points on an internal combustion engine in a BMW motorcycle having a combined mechanical timing advance mechanism and tubular breaker point cam both removably mounted on a driving shaft, comprising the steps of removing

both the mechanical advance mechanism and breaker point cam from the shaft, providing a first cylindrical, tubular gauge having a cylindrical bore of 0.355 inch (9.00 mm.) nominal diameter and an outer cylindrical surface concentric with said bore and of 0.470 inch (11.8 mm.) nominal diameter resulting in a gauge wall thickness equal to the maximum wall thickness of the tubular breaker point cam, disposing the first gauge on the shaft such that the cam follower is displaced from the shaft a distance corresponding to the maximum lift produced by said cam, providing a second gauge having a thickness corresponding to a desired gap between the breaker points, disposing the second gauge between the points while the first gauge is disposed on the shaft, adjusting one of the breaker points relative to the other to develop a gap substantially equal to the thickness of said second gauge, locking said one breaker point in the position determined by said second gauge, thereafter removing said first and second gauges and replacing said tubular breaker point cam and mechanical timing advance mechanism on said shaft.

4,161,825

PLASTICIZED ORGANIC WASTE

Vere Maffet, West Chester, Pa., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 813,578, Jul. 7, 1977, Pat. No. 4,099,336, and a continuation-in-part of Ser. No. 813,577, Jul. 7, 1977, Pat. No. 4,098,006, each is a continuation-in-part of Ser. No. 775,673, Mar. 8, 1977. This application Dec. 8, 1977, Ser. No. 858,879

Int. Cl.[2] F26B *7/00*

U.S. Cl. 34—12 **13 Claims**

1. A plasticized composition comprising sewage sludge dried to less than 15 wt.% water and plasticized at a temperature of at least about 100° C. and a pressure of at least about 300 psig.

4,161,826

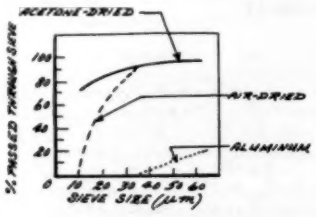
METHOD OF DEAGGLOMERATION OF ALUMINUM POWDER

Joseph J. Hutta, Groton, and Kenneth P. Quinlan, Newton, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 9, 1978, Ser. No. 884,881

Int. Cl.[2] F26B *7/00*

U.S. Cl. 34—12 **2 Claims**



1. A method for the deagglomeration of micrometer-sized aluminum metal powders which comprises the steps of

(1) admixing said powders with water;

(2) allowing said powders to remain in contact with said water at room temperature for a period of time of about 30 hours; and

(3) air-drying the resulting water-treated aluminum powder.

4,161,827

ARTICLES OF FOOTWEAR

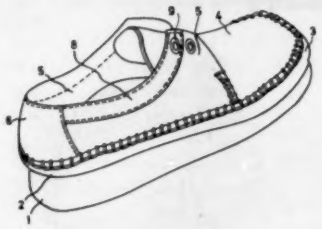
Patrick J. Roberts; Kevin P. Hogan, and Thomas Kealy, all of Kilkenny, Ireland, assignors to Padmore & Barnes International Limited, Kilkenny, Ireland

Filed Oct. 25, 1977, Ser. No. 845,115

Claims priority, application Ireland, Oct. 27, 1976, 2381/76

Int. Cl.[2] A43B *3/14*

U.S. Cl. 36—11 **6 Claims**



1. An article of footwear having an outer sole of resilient material, an under-vamp of soft leather extending over the whole area of the outer sole, the edge of the under-vamp being turned up to form a continuous unseamed rim around the article of footwear, and an upper vamp, a pair of quarters and a counter all of soft leather hand-stitched to the rim to form an upper.

4,161,828

OUTER SOLE FOR SHOE ESPECIALLY SPORT SHOES AS WELL AS SHOES PROVIDED WITH SUCH OUTER SOLE

Hans Benseler, Harkenbleck-Hannover, and Horst Schaefer, Bad Windsheim, both of Fed. Rep. of Germany, assignors to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

Division of Ser. No. 693,956, Jun. 8, 1976, Pat. No. 4,083,125. This application Dec. 22, 1977, Ser. No. 863,088

Claims priority, application Fed. Rep. of Germany, Jun. 9, 1975, 2525613; Jun. 9, 1975, 2525615; Jun. 9, 1975, 2525665

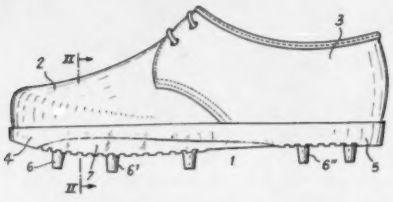
Int. Cl.[2] A43B *13/04, 23/28*

U.S. Cl. 36—32 R **20 Claims**

1. A shoe with an inner sole and an outer sole constructed from a material having rubber-elastic properties, the outer sole including profiled projection means arranged along lateral sole edges, characterized in that the profiled projection means laterally delimit a tread surface of the outer sole, each of the profiled projection means are provided with at least two V-shaped slots extending obliquely to a tangential plane at outer boundary surfaces of the individual profiled projection means substantially in a bisecting plane thereof, said at least two

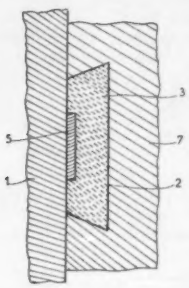
V-shaped slots are nested one within the other, in that the outer sole is provided with inner profiled projections having hollow spaces open in the direction toward the inner sole within an area of a front sole, which hollow spaces are surrounded by the profiled projection means, in that the inner profiled projections project in an unloaded condition of the outer sole with respect to the tread surface formed by the edge profiling, and in that an inner sole covering the hollow spaces of the profiled projections is air-permeable.

4,161,829
SHOES INTENDED FOR PLAYING GOLF
Alain Wayser, 21 rue du Bac, 75007-Paris, France
Filed Jun. 12, 1978, Ser. No. 914,725
Int. Cl.[2] A43B *5/00, 13/04*
U.S. Cl. 36—127 **7 Claims**



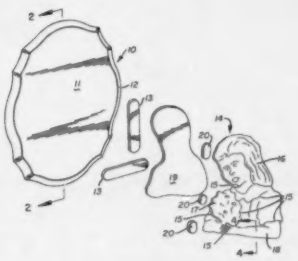
1. A pair of golf shoes, wherein each of the shoes of said pair comprises a bottom extending from one end to the other, substantially on the same plane, forming a sole and a heel, without change in level of the heel with respect to the sole, the bottom comprising a thickness slightly smaller at the level of the heel with respect to the sole, the bottom comprising a thickness slightly smaller at the level of the heel with respect to the sole, this bottom further comprising projections, such as metal studs, the inner part of the shoe comprising a convex portion for supporting the plantar arch, the sole comprising further over limited portions of the edges of said sole, recesses forming bevels, preferably curved, allowing the movement of pivoting of the shoe with respect to the ground.

4,161,830
DEVICE FOR IDENTIFYING INGOTS OR CASTINGS
Patrick R. Gentil, Saint-Cloud, France, assignor to Calider, Saint-Chamond, France
Filed Dec. 12, 1977, Ser. No. 859,953
Claims priority, application France, Dec. 30, 1976, 76 39669
Int. Cl.[2] G09F *3/02*
U.S. Cl. 40—2.2 **4 Claims**



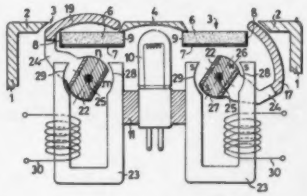
1. A device for use in marking an ingot or casting made in an ingot mould or a metal mould, comprising a body of a refractory material, said body having a low thickness and a characteristic shape, said body having a "dovetail" cross-section so that said body has one face having a smaller surface area than the opposite face, and a magnet incorporated in said refractory body and located in said one face having said smaller surface area.

4,161,831
PICTURE MOUNTING AND DISPLAY
Donald J. Restle, 168 Melrose Ave., Youngstown, Ohio 44512
Filed Sep. 28, 1977, Ser. No. 837,162
Int. Cl.[2] G09F *1/12*
U.S. Cl. 40—160 **1 Claim**



1. A picture mounting and display comprising a base, a photograph having portions thereof partially cut away from other portions thereof, parts of said partially cut away portions being bowed vertically and horizontally, some of said partially cut away portions being spaced outwardly and some of said partially cut away portions being spaced inwardly, both in a different degree with respect to parts of said other portions so as to form shaped interconnecting parts of said photograph, a flat backing member adjacent said photograph engaging parts of said other portions and at least one spacing member positioned between said backing member and said base.

4,161,832
SEVEN-SEGMENTED ELECTROMECHANICAL DIGITAL INDICATOR
Giorgio Bergamini, Bari, Italy, assignor to Nuovo Pignone S.p.A., Italy
Filed Jan. 18, 1978, Ser. No. 870,325
Claims priority, application Italy, Feb. 1, 1977, 19834 A/77
Int. Cl.[2] G09F *13/28*
U.S. Cl. 40—451 **6 Claims**



1. An electromechanical digital indicator, comprising a box on the top plate of which are formed seven slits or windows arranged in the fashion of a figure-of-eight as the sides of two superposed parallelograms, in correspondence of which there can be caused to appear or disappear seven angularly movable segments, the angular displacement of each movable segment from a stable position corresponding to an inactive or out-of-view segment to another stable position corresponding to an active or in-view segment, or vice versa being obtained by the agency of a driving electromagnetic circuitry composed by a permanent magnet which, hinged in the inside of such a box and integral with said movable segment, magnetically cooper-

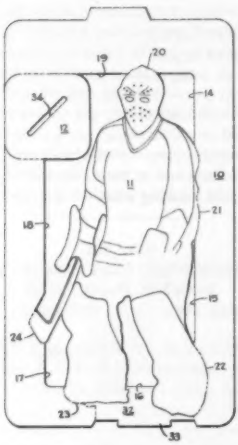
ates with an electromagnet also contained in said box, characterized in that said permanent magnets of the driving magnetic circuits of the angular displacements of said movable segments to which they are solidly fastened, are centrally hinged with respect to their central axes, each between the two pole shoes of an electromagnet which has substantially the shape of a "U," which shoes confront respectively the two magnetized front ends of said permanent magnet and encompass them along the entire arc of circle described by the angular displacement of the movable segment integral with the permanent magnet.

4,161,833

CUTOUT DISPLAY DEVICE

Kenneth E. Wagner, Williamsville, N.Y., assignor to Carton-Craft Corp., Buffalo, N.Y.

Continuation of Ser. No. 687,525, May 18, 1976, abandoned. This application Sep. 30, 1977, Ser. No. 838,067
Int. Cl.[2] G09F *1/08*
U.S. Cl. 40—539 **1 Claim**



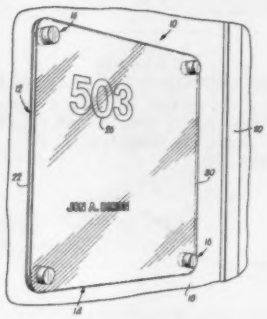
1. A display device comprising a rigid inflexible panel having an irregularly shaped display figure or object depicted thereon, a series of die-cuts in said panel providing open areas surrounding a major portion of the outline of said display figure or object, and score lines outlining the remaining portions of the outline of said figure or object and connecting between said die-cuts, whereby the surrounding portion of said panel may be broken away from said display figure without flexing or bending of said figure to effect complete separation of said display figure from said panel, said panel being fabricated by die-cutting and scoring a plurality of indentical chipboard laminations in corresponding identical locations thereon and adhesively securing them to each other in laminated form to form a die-cut panel of substantial thickness and rigidity, said figure has a tab formation at the lower end thereof and said surrounding portion of said panel includes a base member having a slot therein for receiving said tab formation to support said figure in an upright position, said panel further includes a score line extending from an outer edge thereof inward to said display figure to facilitate the beginning of the separation of the surrounding panel from the display figure.

4,161,834

THEFT PROOF MODULAR SIGN

Howard K. Hendricks, Jr., 4030 W. 97th Ter., Overland Park, Kans. 66207

Filed Aug. 2, 1977, Ser. No. 821,320
Int. Cl.[2] G09F *15/00*
U.S. Cl. 40—606 **5 Claims**



1. A theft-proof wall-mounted sign including:
a rigid base plate having indicia superimposed on one face thereof;
a transparent overlay plate in juxtaposition with said base plate and protectively covering said indicia;
at least one elongate threaded member having one end rigidly secured to said wall and an opposed end projecting outwardly therefrom, said member engaging said plates intermediate said ends to mount the latter in a substantially upright position on said wall with said indicia facing outwardly therefrom;
a solid retainer threadably coupled with said opposed end and having a side wall portion and an end section disposed in enveloping relation to said opposed end for holding said plates juxtaposed and maintaining the latter in engagement with said member, said retainer being provided with an inner flat surface in complemental abutting relationship to said overlay plate,
said retainer having a transverse cross-sectional area greater than that of said member to create an illusionary appearance of support for said sign which is more substantial than that actually presented by the threaded member;
a spacer supported on said threaded member between the wall and said base sheet, said spacer having opposed flat faces, one of which abuts the base sheet and the other being adapted to abut the wall, said spacer being provided with a transverse cross-section identical to that of said retainer whereby the illusionary appearance of increased support is further enhanced; and
set screw locking means extending transversely through the side wall of the retainer and releasably engaging said member for preventing unauthorized rotation and thereby removal of the retainer from the member whereby the sign is rendered substantially tamper-proof.

4,161,835

SCATTER SHIELD FOR WEAPON AIMING LIGHT

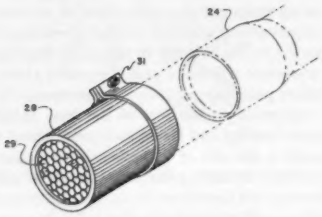
Lewis E. Lough, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 16, 1977, Ser. No. 861,138
Int. Cl.[2] F41G *1/36*
U.S. Cl. 42—1 A **1 Claim**

1. A scatter shield assembly attached at the output end of an infrared aiming light for reducing the easily detectable wide angle scattered infrared light accompanying a narrow infrared aiming light beam emanated from said infrared aiming light yet

readily allowing transmission of said infrared aiming light beam therethrough, the assembly comprising:

a scatter shield comprised of a cluster of thin walled aluminum honeycomb, adjacent hexagonally shaped tubular sections that are evenly hollow throughout their entire length for allowing easy light transmission therethrough and having a length to diameter ratio of 10:1 with the diameter being measured across the flat sides of the hexagonal shape with said tubular sections being surrounded by a rigid outer shell wherein said scatter shield is finished with a dull flat black, non-reflective coating; and



a screw threadably attachment means for attaching said scatter shield at said output end of said infrared aiming light wherein screw threads on the outside of said rigid outer shell mesh with screw threads on the inside of an extension of said output end of said infrared aiming light.

4,161,836

BREECHBLOCK ASSEMBLY AND AN OPERATING MECHANISM FOR A FIRE-ARM AUTOMATIC LOADING

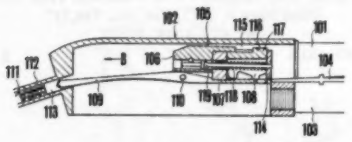
Hisao Hayashi, Tokyo, Japan, assignor to Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-ten, Tokyo, Japan

Filed Nov. 15, 1977, Ser. No. 851,736

Claims priority, application Japan, Nov. 25, 1976, 51-141399; Dec. 22, 1976, 51-154703; Dec. 22, 1976, 51-172181[U]

Int. Cl.[2] F41C *11/06*

U.S. Cl. 42—16 **6 Claims**



1. In a breechblock assembly of an automatic gun the improvement comprises in combination a receiver, an axially extending gunbarrel fixed at one end to and extending axially from said receiver and having a breech face at the one end thereof, a breechblock slider having a substantially C-shaped or partly cylindrical embracing portion with its front end opened and housed in said receiver so as to be movable therein forwardly and backwardly, a substantially stem-shaped breechblock in slidable engagement with said embracing portion of said breechblock so as to be moved relatively to said breechblock slider by a predetermined distance in the axial direction thereof thereby permitting the breech face of said gunbarrel to be tightly closed, a locking block housed in a radial throughhole formed in said breechblock, said locking block having a projection formed in the upper portion of the front end of said locking block and said projection being engaged in a recess formed in an extended portion of the gunbarrel so as to restrict the backward movement of said breechblock and the rear end portion of said locking block being arrested by said embracing portion of said breechblock slider so as to prevent the withdrawal of said locking block, and means for swinging said locking block so as to protrude said projection of said locking block through said throughhole when the span between said breechblock and said breechblock slider is contracted while said projection is retracted into said throughhole when said span is extended.

4,161,837

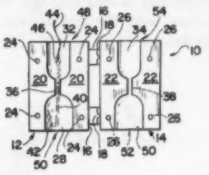
FISHING HOOK BAIT MOLD

Gerald M. Johnston, 954 Tiger Tail Rd., Vista, Calif. 92083

Filed Dec. 16, 1977, Ser. No. 861,121

Int. Cl.[2] A01K *97/00*

U.S. Cl. 43—4 **7 Claims**



1. A fishing hook bait mold comprising a first half body and a second half body, means to hingeably secure said half bodies together, each of said bodies having a lateral surface, means to have each of said half bodies dispose each lateral surface in touching engagement with each other, each said lateral surface having a first cavity and a second cavity, each said lateral surface having a passageway therein communicating to the interior of said first cavity and said second cavity, a first semispherical cavity and a second semispherical cavity being formed when said first half body and said second half body are pivoted into a closed condition wherein said lateral surfaces are juxtaposed, said first semispherical cavity having an open mouth portion, said second semispherical cavity having an open mouth portion, said open mouth portion of said first semispherical cavity being disposed opposite to said open mouth portion of said semispherical cavity, said first cavity of each of said half bodies forming said first semispherical cavity when said body halves are disposed in said closed condition, said second cavity of each of said half bodies forming said second semispherical cavity when said body halves are disposed in said closed condition, said passageway in each said lateral surface being disposed in juxtaposed relationship and extending transverse to said open mouth portions of said first semispherical cavity and said second semispherical cavity when said body halves are disposed in said closed condition, wherein a fishing hook having a line receiving eye end and a barbed carrying end and a shank portion thereinbetween, may have a portion of said shank portion carried within said passageway and may have said line receiving eye end and said barb carrying end selectively disposed within said first and said second semispherical cavities when said body halves are disposed in said closed condition.

4,161,838

FISHING IMPLEMENT

Daniel D. Gapen, Rte. 1, Big Lake, Minn. 55309

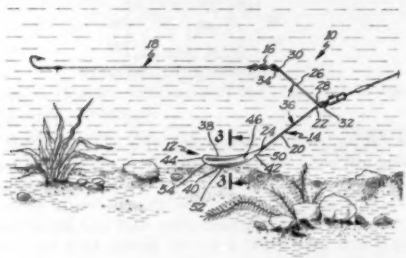
Filed Jul. 5, 1977, Ser. No. 812,803

Int. Cl.[2] A01K *85/00*

U.S. Cl. 43—42.11 **2 Claims**

1. Fishing implement arranged for attachment to a reel-line and for attaching a fishing hook assembly for working the fishing hook assembly on the water bottom, for trolling the fishing hook assembly in a manner preventing twisting of the fishing hook assembly, for elevating the fishing hook assembly, or for properly presenting the fishing hook assembly while trolling, drifting, river fishing, or still fishing, comprising, in combination: an L-shaped spring wire having a first wire leg including a first end and a second end and a second wire leg

including a first end and a second end, with the first ends of the first and second legs being joined by a twist forming a reel-line attachment loop at their junction; a loop formed on the second end of the second leg for attaching the fishing hook assembly to the fishing implement; and a sinker attached to the second end of the first leg, with the sinker being of a substantially snagless shape and including: a top surface, a bottom surface, a first end, a second end opposite to the first end, and first and second sides, with the bottom surface including: a first, generally straight portion, a second, generally rounded portion, and a third, generally raised end portion, with the first portion and the first leg extending in a generally tangential manner from the second portion for presenting an advancement plane which is generally straight and having no edges for snagging or catching on obstructions, with the top surface being generally flat for allowing the fishing implement to run at a constant depth



and for aiding the fishing implement to maintain a vertical orientation, with the first end having a tear drop shape formed from the tappering together of the top surface, the bottom surface, and the first and second sides, with the second end being rounded and slightly dished up and formed from the top surface, the bottom surface, and the first and second sides rounding and dishing up together, with the first and second sides flowing from the first end and following through with the contour of the first end, for minimizing the water flow disturbance around the sinker and for presenting no edges for snagging or catching obstructions, and with the attachment loop being formed forward and above the sinker and the attaching loop being located above the attachment loop and the sinker for allowing the sinker to rock to a secondary position having a greater vertical orientation such that the fishing implement is able to raise itself over obstructions.

4,161,839

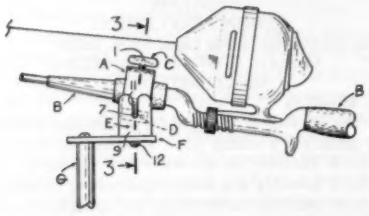
SWIVEL DEVICE FOR SUPPORTING A BALANCED OR SEMI-BALANCED FISHING ROD AND INDICATING WHEN A FISH STRIKES

Russell L. Ward, 1258 Esser Ave., San Leandro, Calif. 94579

Filed Feb. 21, 1978, Ser. No. 879,615

Int. Cl.[2] A01K *97/12*

U.S. Cl. 43—17 **1 Claim**



1. A swivel device for supporting a fishing rod at or near the center of gravity of the rod and in which the rod is free to swing about a vertical and horizontal axis and can be freely lifted in a vertical direction off from the swivel device and comprising:

(a) a clevis shaped support having vertically extending and spaced apart side walls integral with a web portion of the clevis, the planes of the side walls paralleling each other and each side wall having a vertical slot extending downwardly from its upper edge, the bottom of each slot lying in the same horizontal plane;

(b) a trunnion bearing having a base with diammetrically extending trunnions projecting beyond said base and rockably receivable in said slots so that when the trunnions are supported by the bottoms of said slots, the aligned axes of said trunnions will lie in said horizontal plane;

(c) a fishing pole clamping member permanently and pivotally connected to the top of the base member of said trunnion bearing and freely swingable about said pivotal connection, the axis of said pivotal connection being normal to and intersecting the common axis of said trunnions; and

(d) whereby said clamping member is free to swing about the pivotal connection between the clamping member and the trunnion bearing base as the fishing pole may be swung laterally, said trunnion bearing base being free to swing about the common axis of said trunnions to permit the fishing pole to likewise freely swing in a plane normal to said same horizontal plane, and the pole and said clamping member with its attached trunnion bearing beikng moved when a fish strikes to attract the fisherman, and permitting him to grasp the pole and freely lift it in a vertical direction to free the trunnions from the slots in said clevis side walls so that the fisherman can play the fish immediately and capture it.

4,161,840

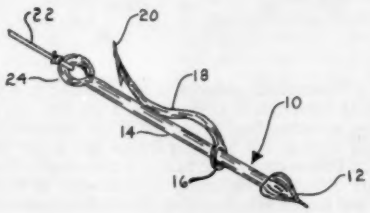
FISH HOOK

David B. Kidd, 5820 Hillsboro Rd., Nashville, Tenn. 37215

Filed May 9, 1977, Ser. No. 794,717

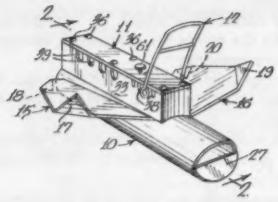
Int. Cl.[2] A01K *83/00*

U.S. Cl. 43—43.4 **6 Claims**



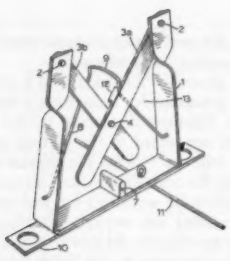
1. A fish hook comprising at least one S-shaped hook member with a barb at one end thereof and an other end, a linear shaft having a first end and a second end, said second end having means thereat for attachment to a fishing line, said hook member being attached to said shaft such that said barb rests against said shaft and the other end of said hook member being sufficiently loosely fitted around said shaft for the hook member to lift up and be forced out into a fish's mouth when the fish bites, said S-shaped hook member extending generally along the length of said shaft and with the barb pointing outward but generally toward the second end of said shaft hook member and said shaft, and said hook member and said shaft being completely concealable inside a worm lure.

4,161,841
FISHING DEVICE
Frederick W. Holstein, 1331 Howe St., Racine, Wis. 53403
Filed Jan. 26, 1978, Ser. No. 872,552
Int. Cl.[2] A01K 95/00
U.S. Cl. 43—43.13 18 Claims



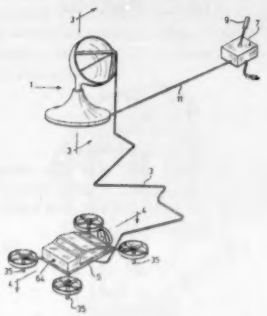
1. A fishing device having a body, a bail pivotally connected to said body intermediate the ends thereof for connection to a tow line, a pair of wings extending outwardly one from each side of the body and angled relative thereto to provide thrust surfaces for controlling the attitude of the body while moving in water, and front and rear deflectors associated with each wing in fixed relation thereto with the front deflector turned up from the plane of the wing and the rear deflector turned down from the plane of the wing for causing alternate rising and diving of the device as the angle of the bail to the body changes at different levels in the water because of the tow line connection.

4,161,842
TRAPS FOR ANIMALS
Armand Jacob, R.R. 5, Tilbury, Ontario, Canada
Filed May 2, 1977, Ser. No. 792,533
Int. Cl.[2] A01M 23/24
U.S. Cl. 43—85 5 Claims



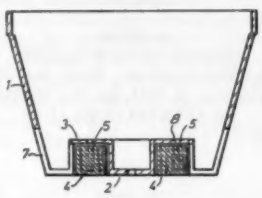
1. A trap for animals comprising a peripheral frame defining an opening, and having a gap therein above the opening, portions of the frame to either side of the gap being spring urged towards one another, a pair of strike arms for delivering a killing blow to an animal entering the trap, said arms being pivotally connected to the frame one arm to each side of the gap, the arms being pivotally connected to one another to form a toggle linkage collapsible downwardly into a sprung condition within the frame opening under the spring urging of the frame, the assembly of frame and strike arms having an alternative set condition with the toggle linkage at least partially straightened and the frame portions to either side of the gap drawn apart, latch means to hold the assembly of frame and strike arms in said set condition, and trigger means to release the latch means upon an animal reaching a predetermined position with its neck in the opening beneath the strike arms.

4,161,843
ELECTRICALLY POWERED TOY AIRCRAFT
Danny C. T. Hui, 15 Trudy Rd., Willowdale, Ontario, Canada (M2J 2Y7)
Filed Sep. 1, 1978, Ser. No. 938,840
Int. Cl.[2] A63H 27/04
U.S. Cl. 46—75 10 Claims



1. An electrically powered toy including a stand having a rotatable portion, a flying body adapted to fly above said stand, and a flexible cable interconnecting the flying body and rotatable portion of the stand, the flying body being provided with four identical propellers rotatable in the horizontal plane and arranged in a rectangular pattern, a drive motor located centrally of the four propellers, gear means driven by the motor for rotating said four identical propellers at the same speed, and a fifth smaller propeller rotatable by the motor in the vertical plane.

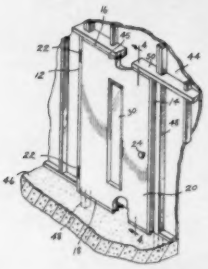
4,161,844
HYDROCULTURE PLANT POT WITH AN INSERTED CONTAINER FOR RECEIVING A HYDROCULTURE FERTILIZER
Claus Hentschel; Karl Martin, both of Cologne, Fed. Rep. of Germany, and Leonard Volckaert, Merelbeke, Belgium, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany
Filed Dec. 12, 1975, Ser. No. 640,311
Int. Cl.[2] A01G 27/00
U.S. Cl. 47—62 2 Claims



1. A hydroculture plant pot with an inserted container for receiving a hydroculture ion exchange fertilizer, means for insuring that said container will always be surrounded by water as long as any water remains in said plant pot, including an annular compartment projecting from the bottom of said plant pot and surrounding a portion of said bottom, said annular portion being surrounded by an additional portion of said bottom, means to enable water passage between said compartment and the remainder of said plant pot, said container being positioned in said compartment and being provided with apertures to permit the passage of water, the dimensions of said

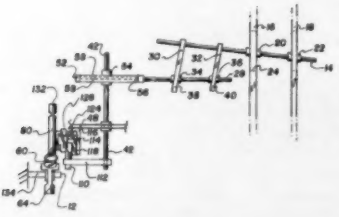
apertures being less than the size of the particles of the hydroculture fertilizer.

4,161,845
INVERTIBLE PREFABRICATED DOOR
Donald B. Naylor, 1013 N. Michigan St., Plymouth, Ind. 46563
Filed Aug. 22, 1975, Ser. No. 607,028
Int. Cl.[2] E06B *3/32*
U.S. Cl. 49—380 **1 Claim**



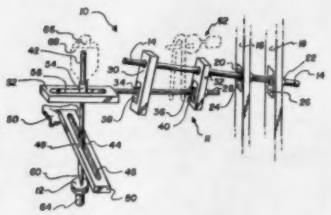
1. An invertible prefabricated door assembly for mounting within a wall opening defined by a foundation and overhead support, said door assembly comprising a panel, first and second jambs, a first combined header and threshold means, a second combined header and threshold means, said jambs and both combined header and threshold means forming a four-sided enclosed frame, said panel fitting within said frame and having opposite vertical side edges, hinge means pivotally connecting said panel at one side edge to said first jamb, each of said first and second combined header and threshold means for mounting either to the foundation or the overhead support of a said wall opening depending upon the desired location of said hinge means, each combined header and threshold means including a first part which said panel overlaps when closed and a second part extending substantially forwardly of said first part to define a grooved panel, said first part being offset from said second part and separated therefrom by a shoulder constituting a portion of each combined header and threshold means, said panel having upper and lower marginal edges, said upper panel marginal edge overlying the shoulder of said first combined header and threshold means and said lower marginal panel edge overlying the shoulder of said second combined header and threshold means when said panel is closed.

4,161,846
CENTER OF CURVATURE
Uoo S. Whang, 750 Arlington Dr., Waco, Tex. 76710
Filed Apr. 4, 1977, Ser. No. 783,964
Int. Cl.[2] B24B *13/00, 17/02*
U.S. Cl. 51—33 W **3 Claims**



1. An apparatus for performing an operation in the shape of a given curve on a workpiece comprising, in combination:
a working interface;
a tool holder for positioning the working interface;
a means for positioning a subcenter about which to rotate the tool holder;
a curve tracer for tracing the given curve;
a means for detecting a change in vertical position of the traced curve;
a means for obtaining a length by multiplying a change detected by the means for detecting a change in vertical position by a constant;
a means for changing the position of the means for positioning a subcenter by the length obtained from the multiplying means;
a virtual tool holder responsive to the curve tracer rotatable about the subcenter positioned by the subcenter positioning means; and
a means for connecting the tool holder in a fixed relationship to the virtual tool holder whereby the working interface positioned by the tool holder maintains substantially single point contact with the workpiece.

4,161,847
APPARATUS AND METHOD FOR PERFORMING ASPHERICAL OPERATIONS ON A WORKPIECE
Uoo S. Whang, Waco, Tex., assignor to New Asian Corporation, Waco, Tex.
Filed Apr. 4, 1977, Ser. No. 783,969
Int. Cl.[2] B24B *13/00, 17/02*
U.S. Cl. 51—33 W **12 Claims**

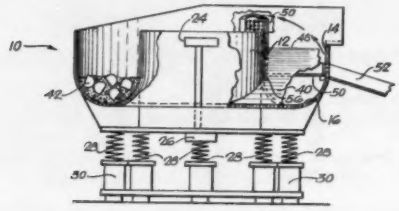


1. An apparatus for performing conic sectional operations on a workpiece comprising, in combination;
a conic surface generator for describing a cone;
a cutting plane generator for describing a plane;
a conic section follower connected to the conic surface generator and connected to the cutting plane generator whereby the follower follows the intersection of the cutting plane and the cone as the cone is generated;
a working interface for working on a workpiece; and
means for connecting the working interface to the conic section follower whereby the working interface traces the conic section generated by the intersection of the cone and the plane.

4,161,848
VIBRATORY FINISHING DEVICE
George F. Jones, Mishawaka, Ind., assignor to Wheelabrator-Frye Inc., Hampton, N.H.
Continuation of Ser. No. 748,953, Dec. 9, 1976, abandoned. This application Mar. 17, 1978, Ser. No. 887,758
Int. Cl.[2] B24B *31/12*
U.S. Cl. 51—163.2 **7 Claims**

1. The combination with a finishing mill having a substantially annular trough adapted to contain a charge of treating media and parts, and means for vibrating said trough to cause the media and parts to travel about the trough in an orbital path, a means for separation of parts from the media for removal of the parts while the media is retained in the trough comprising a barrier extending crosswise of the trough, said

barrier having a surface rising gradually to an apex at a level above the bottom of the trough whereby the depth of the parts and media immediately in advance of the barrier builds up to a level above the apex for clearance thereof, said barrier tapering off abruptly from the apex whereby the level of parts and media immediately beyond the barrier falls to a level below the apex to closely adjacent the bottom of the trough, and a separator screen immediately beyond and adjacent the barrier at a



level below the apex of the barrier but above the bottom of the trough for receiving the parts and media overflowing the barrier and to separate the parts on the surface thereof while the media passes through into the underlying portions of the trough, and a discharge means for receiving the parts separated on the surface of the separator screen, said separator screen being dimensioned to have a length to extend a short distance beyond the barrier.

4,161,849

AUXILIARY WORKPIECE-LOADING AND -UNLOADING APPARATUS

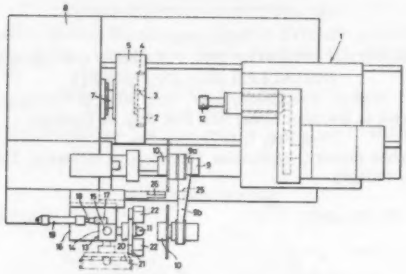
Hugues Voumard, and Roger Sauvain, both of La Chaux-de-Fonds, Switzerland, assignors to Voumard Machines Co., Switzerland

Filed Dec. 21, 1977, Ser. No. 862,931

Claims priority, application Switzerland, Dec. 22, 1976, 16193/76

Int. Cl.[2] B24B *5/10*

U.S. Cl. 51—215 CP **2 Claims**



1. Auxiliary workpiece loading and unloading apparatus for use with a machine tool comprised of a workpiece supply location, a horizontal axis headstock having a machining station, and transport means having one or more rotary or pendular arms for causing workpieces to be moved from said supply location to said machining station without said workpieces undergoing a change of orientation, said apparatus comprising: a workpiece holder pivotable about a substantially vertical axis, capable of effecting alternating rotary movements about said vertical axis in a sequence synchronized with the movements of said transport means; means for causing said workpiece holder to carry out said alternating rotary movements correlatively to the movements of said rotary or pendular arm; workpiece support means for receiving each of said workpieces at a side of said machine tool and for subsequently presenting each of said workpieces in proper orientation to said transport means, said workpiece support means including two lower shoes and a hydraulically or pneumatically controlled upper jack for pressing said workpieces vertically against said shoes in order to hold said workpieces firmly in place during said movements of said workpiece holder, said shoes being adjustable in height so that when said workpiece holder is facing in the direction of the longitudinal axis of said machine tool, an unmachined workpiece will be correctly positioned at said supply location to be picked up by said rotary or pendular arm, and said workpiece support means will be correctly positioned at a location to receive a machined workpiece from said rotary or pendular arm.

4,161,850

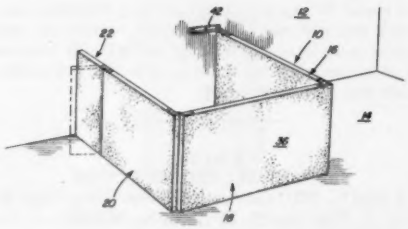
ROOM DIVIDER

Lyle R. Peterson, 429 E. 1700S, Bountiful, Utah 84010, and Brent A. Peterson, Rte. #3, Rexburg, Id. 83440

Filed Feb. 1, 1978, Ser. No. 874,313

Int. Cl.[2] E04B *2/82*

U.S. Cl. 52—65 **9 Claims**



1. A room divider comprising a plurality of vertically disposed, rigid panels, means pivotally connecting adjacent end edges of adjacent panels together, means pivotally supporting only the free end edge portion of one of the endmost of said panels from a building structure to enable swinging movement about a substantially vertical axis, means along the lower edge of said panels for rolling engagement with a supporting floor surface, the end of the other endmost panel remote from the point of attachment with the building structure including a pivotal access door, and means pivotally connecting the access door to the adjacent panel, said means connecting the end edge portion of one panel to a building structure including a supporting plate rigidly connected to the building structure adjacent a vertical support and including an upstanding pivot pin pivotally engaging the bottom edge of the end portion of the panel, a bracket attached to the vertical support in vertically spaced relation to the mounting bracket and including a depending pivot pin engaging a longitudinal slot in a plate in the top edge of the end portion of the panel to enable inward and outward movement of the top edge portion of the panel connected to the building structure to compensate for unevenness and irregularity in the floor surface supporting the panels.

4,161,851

MOTOR VEHICLE WINDOW ASSEMBLY

Hiroshi Inamoto, and Yoshinori Morita, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 3, 1978, Ser. No. 875,105

Claims priority, application Japan, Feb. 4, 1977, 52-13068[U]

Int. Cl.[2] E06B *1/36*

U.S. Cl. 52—208 **12 Claims**

1. A motor vehicle window assembly comprising:

painted body panels having a side wall defining a window opening and a bottom wall projecting into said window opening;

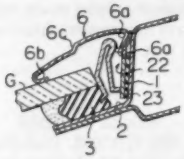
a glass pane for closing said window opening and when

mounted therein having a space between the edge of said glass pane and said side wall;

adhesive means for mounting said glass pane to said bottom wall;

a spacer adhesively attached to and extending continuously along all of the length of said side wall; and

molding having a depending flange portion engaging said spacer, an end portion engaging the perimeter on the outer



side of said glass pane and a trim portion extending between said depending flange portion and said end portion to bridge said space;

said spacer having a portion extending between said side wall and said molding to prevent contact and mutual abrasion between said molding and said side wall and to prevent accumulation of abrasive particles between said side wall and said molding.

4,161,852

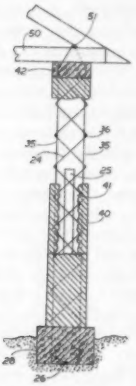
ADOBE WALL CONSTRUCTION

Karl V. Schultz, 18322 Carlwyn Dr., Castro Valley, Calif. 94546

Filed Oct. 17, 1977, Ser. No. 842,674

Int. Cl.[2] E04B *1/00*

U.S. Cl. 52—250 **7 Claims**



1. An integral reinforcing means for a unitary foundation-reinforced solid adobe wall-roofing beam construction having:

(a) a foundation;

(b) a reinforced adobe wall extending upwardly from said foundation; and

(c) a roofing beam resting upon the top of said wall; said integral reinforcing means comprising:

(1) a plurality of readily bendable upright wire trusses, the lower ends of which are embedded within said foundation and the upper ends of which are provided with a respective loop through which the roofing beam extends;

(2) a pair of spaced flexible wire mesh extending the length of said wall and loosely pinned to opposite sides of said wire trusses; and wherein the adobe wall is formed around said wire trusses and wire mesh.

4,161,853

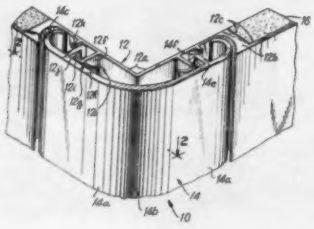
RESILIENT WALL PROTECTOR

Kenneth Weiss, Plainview, and Martin Fieder, Scarsdale, both of N.Y., assignors to A. R. Nelson Co., Inc., Long Island City, N.Y.

Filed Nov. 25, 1977, Ser. No. 854,805

Int. Cl.[2] E04B *5/00*

U.S. Cl. 52—288 **12 Claims**



1. A resilient wall protector comprising a retainer member adapted to be connected to a wall surface to be protected and having at least one locking portion generally projecting outwardly from a wall portion of said retainer member; a resilient member configurated to substantially cover said retainer member when mounted thereon, said resilient member having at least one engaging portion projecting towards said retainer member and adapted to snappingly engage said locking portion and generally maintain said retainer and resilient members spaced from each other at a predetermined distance, application of inward pressures on said resilient member towards said retainer member causing said resilient member to at least partially deform and causing said locking and engaging portions to separate from each other along the direction of said wall portion while still maintaining locking engagement between said portions and said members; and an end limit rib or stop projecting from said wall portion and spaced from said locking portion to prevent excessive relative movement between said engaging and locking portions and limit such relative movement to a predetermined or desired amount.

4,161,854

MOUNTING DISK FOR THE FIXATION OF LOOSELY INSTALLED SEALING SHEETS

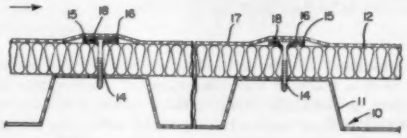
Harry Stelzer, Troisdorf-Sieglar, Fed. Rep. of Germany, assignor to Dynamit Nobel AG, Fed. Rep. of Germany

Filed Feb. 7, 1977, Ser. No. 766,502

Claims priority, application Fed. Rep. of Germany, Feb. 5, 1976, 7603185

Int. Cl.[2] B32B *7/08*

U.S. Cl. 52—309.1 **10 Claims**



10. Mounting disk arrangement for the fixation of loosely installed sealing sheets of a synthetic resin, wherein the mounting disk can be attached to a substructure by means of a screw passed through the mounting disk; said mounting disk arrangement including:

a mounting disk,

a screw passed through the mounting disk for connecting the same to a substrate,

and a blocking means attached to the mounting disk to

prevent the unturning of the screw passed through the mounting disk and connected to the substrate,

said mounting disk, said screw, and said blocking means being arranged whereby said sealing sheets of a synthetic resin can be affixed to the arrangement of the mounting disk, the screw and the blocking means,

said mounting disk arrangement having sealing sheets of a synthetic resin affixed to the arrangement of the mounting disk, screw and blocking means.

4,161,855

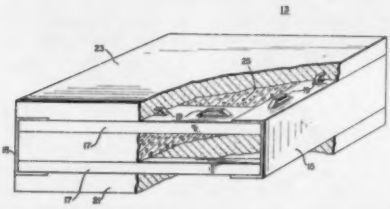
THERMAL INSULATION MATERIAL AND PROCESS FOR MAKING THE SAME

Robert F. Mulvey, Malvern, and Charles E. Crepeau, Centre Square, both of Pa., assignors to General Electric Company, Philadelphia, Pa.

Division of Ser. No. 678,842, Apr. 21, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,452

Int. Cl.[2] E04B *2/00, 5/00*

U.S. Cl. 52—612 **5 Claims**



1. A thermally insulating composite assembly comprising generally at least one structural surface element and a low density cellular gypsum material positioned adjacent to said surface element, said cellular gypsum material comprising a gypsum matrix having minute cavities homogeneously distributed therein, said gypsum material having a dry density in the range of about 3 to about 6 pounds per cubic foot and a thermal coefficient of less than about 0.36.

4,161,856

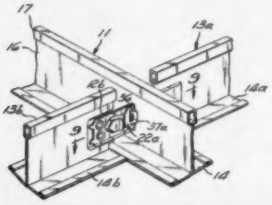
SUSPENSION CEILING SYSTEM

Donald A. Brown, Westlake, and Paul D. LaLonde, Avon Lake, both of Ohio, assignors to Donn Products, Inc., Westlake, Ohio

Filed Nov. 15, 1976, Ser. No. 741,738

Int. Cl.[2] E04C *2/42*

U.S. Cl. 52—667 **11 Claims**



1. A suspension ceiling system or the like adapted to be assembled to form a grid defining panel openings comprising main tee members each having a face flange, first end connectors at each end and lateral openings intermediate its ends, and cross tee members each having a face flange, second end connectors at its ends and lateral openings intermediate its ends, said first end connectors and said second end connectors being endwise connectible to provide main runs having alternate main tee and cross tee members, said second end connectors being endwise connectible at said lateral openings to provide cross runs extending perpendicular to said main runs, said cross tee members having a length corresponding to a dimension of said panel openings minus the width of a flange, said main tee members having a length corresponding to a panel opening dimension plus the width of a flange whereby when said main tees and cross tees are endwise interconnected to form main runs and said cross tees are connected between said main runs the panel opening dimensions are maintained.

4,161,857

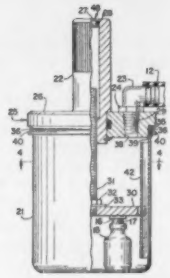
FREEZE DRYING CONTAINER WITH MANUAL STOPPERING

Douglas S. Fraser, New Paltz, N.Y., assignor to FTS Systems, Inc., Stone Ridge, N.Y.

Filed May 12, 1978, Ser. No. 905,427

Int. Cl.[2] B65B *31/02*

U.S. Cl. 53—97 **9 Claims**



1. A stoppering container for the stoppering of sample vials under vacuum comprising a cover assembly, a stoppering plate and a container body, said cover assembly including a cover plate having an opening therein, a handle rotatably secured in said opening, a shaft, said shaft being fixedly attached at a lower end to said stoppering plate and threadedly attached on an upper portion to said rotatable handle, said container body having means for guiding said stoppering plate for vertical movement in a substantially fixed circumferential orientation, whereby upon rotation of said handle, said shaft and said stoppering plate may be controllably vertically moved within said container body to force stoppering plugs into sample vials.

4,161,858

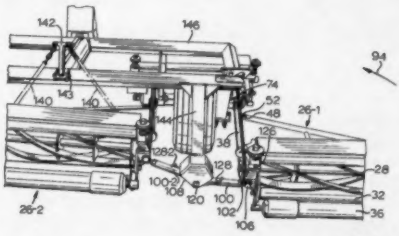
GANG MOWER

Theodorus P. H. Gerrits, Wychen, Netherlands, assignor to Brouwer Turf Equipment Limited, Keswick, Canada

Filed Jan. 9, 1978, Ser. No. 867,867

Int. Cl.[2] A01D *75/30*

U.S. Cl. 56—7 **6 Claims**



1. A mower having

(1) a wheel supported main frame for movement along a path of travel,

(2) a mower unit having a mower reel for cutting grass, said mower unit having a mower frame having an inner side

located adjacent said main frame and an outer side located remote from said main frame,

(3) a first pulley mounted on said mower frame at the inner side thereof for driving said reel,

(4) a second pulley mounted on said main frame for driving said first pulley, said second pulley being spaced along said path of travel from said first pulley, and a flexible belt extending between said pulleys, said belt having upper and lower flights,

(5) means for driving said second pulley so that said upper flight moves from said first pulley toward said second pulley,

(6) a telescopic connecting arm extending along the longitudinal axis of said belt between the flights thereof, said connecting member having an outer tubular member having first and second ends, said first end being rigidly connected to said mower frame, said arm also having an inner tubular member having a first end telescopically mounted within said second end of said outer member and having a second end pivotally connected to said main frame at a first pivotal connection, the axis of said first pivotal connection being at right angles to said path of travel for movement of said mower unit in an arc about said first pivotal connection,

(7) said inner member being rotatable about its axis within said outer member for rotation of said mower unit about the axis of said inner member,

(8) spring means connected between said inner and outer tubular members and biasing said inner and outer tubular members apart, and means retaining said inner tubular member within said outer tubular member,

(9) a support strut connected to said outer side of said mower frame and extending to and connected with said outer tubular member at a location adjacent said second end of said outer tubular member,

(10) a rear support arm pivotally connected at a second pivotal connection to said inner side of said mower frame and pivotally connected at a third pivotal connection to said main frame, the axes of said second and third pivotal connections both being parallel to said path of travel, whereby to permit up and down movement of the inner side of said mower frame,

(11) and a rear bias spring connected to said main frame and extending over said rear support arm and biasing said rear support arm downwardly to hold said inner side of said mower frame downwardly against the lifting torque of said belt.

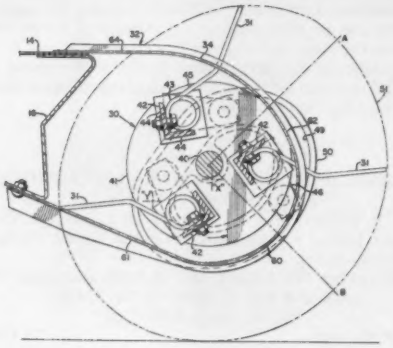
4,161,859

CROP PICKUP DEVICE

Donald P. Storm, Hinsdale, and George W. Ridge, La Grange, both of Ill., assignors to International Harvester Company, Chicago, Ill.

Filed Jun. 9, 1977, Ser. No. 804,969
Int. Cl.[2] A01D *89/00*
U.S. Cl. 56—364 **3 Claims**

1. A crop pickup mechanism comprising a frame, a tine reel having forward upper and lower quadrants rotatably mounted on the frame and including a plurality of axially spaced sets of tines projecting outwardly from said reel, a plurality of laterally spaced material supporting strippers fixed to the frame and defining fore-and-aft extending slots therebetween for the projection of said tines therethrough, each of said strippers being disposed about said reel and having a forward lower portion disposed at a uniform radius about an axis substantially below the axis of rotation of said tine reel and a forward upper portion having a substantially larger radius of curvature than said forward lower portion, said upper portion terminating in a generally horizontal straight trailing portion for attachment to said pickup frame, the projection of said tines beyond said strippers being substantially greater along a line bisecting the



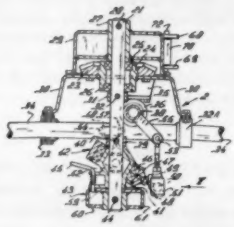
forward upper quadrant of said pickup mechanism than along a line bisecting the forward lower quadrant thereof.

4,161,860

HAYMAKING MACHINE

Cornelis van der Lely, 7, Brüschenrain, Zug, Switzerland

Filed Apr. 8, 1977, Ser. No. 786,030
Claims priority, application Netherlands, Apr. 8, 1976, 7603684
Int. Cl.[2] A01D *81/00*
U.S. Cl. 56—370 **43 Claims**



1. A haymaking machine comprising a frame and at least one rake member that is rotatable about a substantially upwardly extending axis, driving means connected to rotate said rake member about said upwardly extending axis, said rake member having turnable tines that define an outer working circumference and a steering mechanism associated with said tines, said steering mechanism being structured to turn said tines during about one-half of a complete rotation of said rake member to crop depositing positions and during the remaining about one-half of said rotation from crop gathering positions, said steering mechanism including a circular swash plate ring means and at least two elongated tine carriers that are universally pivoted to said swash plate ring means, said tine carriers each comprising an uninterrupted beam continuously extending across the diameter of said rake member and being oppositely positioned to cross one another.

4,161,861

METHOD AND APPARATUS FOR FORMING AN EYE IN CORDAGE

Russell F. Storm, 115 Walnut, Windsor, Ill. 61957

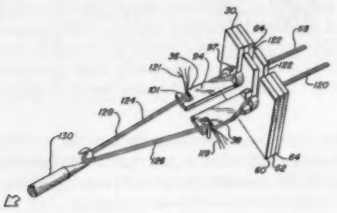
Filed Jun. 14, 1978, Ser. No. 915,502
Int. Cl.[2] D01H *15/00*
U.S. Cl. 57—22 **35 Claims**

1. Apparatus for making an eye in a string having a plurality

of strands, said strands capable of forming at least two bundles, including

a pair of first retaining means for releasably retaining and longitudinally twisting at least two of said bundles of said strands of said string;

a second retaining means spaced from said first retaining means for gripping and retaining a portion of said string at any of a plurality of positions along said string, said second retaining means spaced from said first retaining means; and



means for rotating both of said first retaining means in the same direction, either clockwise or counterclockwise,

whereby said bundles retained by said first retaining means may be twisted longitudinally in one direction thereby to provide a pretwist in said bundles and, after said bundles being laid over each other at the distal ends thereof, may be twisted longitudinally in an opposite direction to form said eye.

4,161,862

DRAW ROLL DRIVE ARRANGEMENT

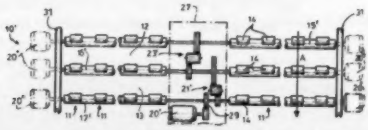
Max Hartmannsgruber, Kirchheim; Gunter Schulz; Konrad Klein, both of Ebersbach, and Horst Wolf, Albershausen, all of Fed. Rep. of Germany, assignors to Zinser Textilmaschinen GmbH, Ebersbach, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,701

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641434

Int. Cl.² D01H *1/22*

U.S. Cl. 57—92 **21 Claims**



1. A long spinning machine, preferably a ring spinning machine having at least one drive motor with a plurality of drawing means which serve to draw the fiber strands that are arranged next to each other at least on one side of the machine, with the driving lower rollers of each drawing means being formed by long roller lines, each of which roller lines extends along all of the drawing means of the long side of said machine, and further that the roller lines arranged on said long side of the machine are positively connected to each other at one point along the roller lines by drive gear transmissions thereby correlating the rpm relationships of the roller lines, the further improvement in which at least some of the roller lines of the drawing system that are arranged on the long side of the machine are positively connected with each other at least at one additional point spaced from said one point along the roller lines by additional drive gear transmissions and wherein all of said drive gear transmissions connected to the same roller lines have the same gear ratios and wherein the roller lines associated with the drawing fields having the greatest draft are connected with each other by a plurality of said drive gear transmissions.

4,161,863

ROTARY RING FOR SPINNING AND TWISTING RING MACHINES

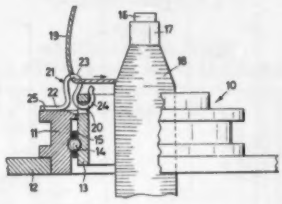
Angelo Marzoli, Palazzolo Sull'Oglio, Italy, assignor to F. lli Marzoli & C. S.p.A., Palazzolo Sull'Oglio, Italy

Filed Mar. 2, 1978, Ser. No. 882,692

Claims priority, application Italy, Mar. 2, 1977, 20838 A/77; Jan. 27, 1978, 19716 A/78

Int. Cl.² D01H *7/56*

U.S. Cl. 57—124 **15 Claims**



1. A rotary ring for spinning and twisting frames of the ring class, comprising a spindle-carrying carriage on the frame, an annular stator body fastened to said spindle-carrying carriage, an annular rotor body concentrically connected for rotation to said stator body, characterized by a rider having substantially the shape of a small ring which is hooked to said rotor body and has a portion intended for sliding on a surface of said stator body and a portion spaced apart from said sliding portion and so shaped as to permit the passage of the yarn being processed.

4,161,864

ELECTRONIC WATCH, PARTICULARLY A QUARTZ-CONTROLLED WRISTWATCH

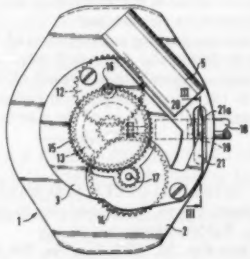
Wolfgang Ganter, Schramberg, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Oct. 27, 1977, Ser. No. 846,120

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1976, 2653081

Int. Cl.² G04C *3/00*

U.S. Cl. 58—23 R **9 Claims**



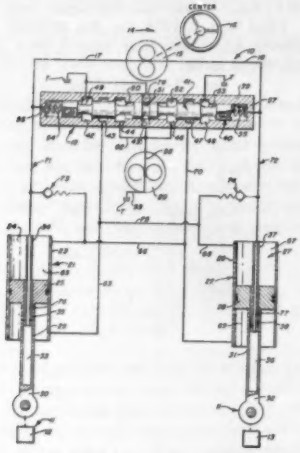
1. In an electronic watch, particularly a quartz-controlled wristwatch; an indicator-hand arrangement; an electronic circuit for controlling said indicator-hand arrangement; hand setting means including a setting shaft adapted to be arrested in different positions thereof; and a support plate, the improvement comprising: arresting means on said setting shaft; and an arresting spring operatively associated with said arresting means, said spring concurrently comprising a switch element through which at least one current path within said electronic circuit is selectively closed and interrupted.

4,161,865

STEERING CONTROL WITH HYDRAULIC FOLLOW-UP

Ralph R. Day, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Jan. 27, 1978, Ser. No. 872,977
Int. Cl.[2] F15B 9/02. 13/06
U.S. Cl. 60—385 22 Claims



1. In a hydraulically operable steering mechanism having a manually operable steering element, a steering cylinder including wall means defining a piston chamber and a piston movable in said chamber, connecting means for connecting the piston to the device to be steered, pump means for providing pressurized hydraulic steering fluid, and a control valve having a movable valve member for controlling the delivery of pressurized fluid from the pump means to the piston chamber selectively to opposite sides of the piston therein to urge the connecting means selectively in opposite directions for effecting a steering movement of the device to be steered, the improvement comprising:

means for biasing said valve member to a nonsteering disposition;

hydraulic means for moving said movable valve member, as an incident of selective disposition of said steering element, from said nonsteering disposition to cause delivery of pressurized hydraulic fluid to said piston chamber selectively to effect a corresponding steering movement of the device to be steered; and

restoring means responsive to movement of the device to be steered to hydraulically move said valve member back to the nonsteering disposition as a result of the device being disposed in the steering disposition corresponding to the selected steering disposition of the steering element.

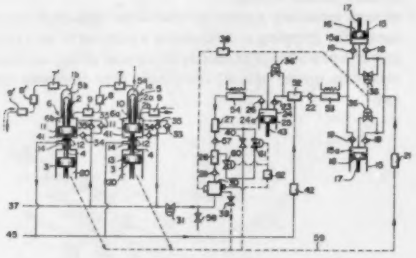
4,161,866

STIRLING CYCLE MACHINE

Shuichi Kamiyama, Tokyo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 30, 1977, Ser. No. 838,370
Int. Cl.[2] F02G 1/04
U.S. Cl. 60—517 12 Claims

1. A Stirling cycle machine comprising a rotatable shaft, a plurality of cylinders disposed around said shaft, a plurality of pistons respectively disposed in said cylinders for reciprocating movements so as to define working chambers for a Stirling cycle operation, means for connecting said pistons with said shaft so that the reciprocating movements of the pistons are interrelated with rotation of the shaft, a plurality of compressor means disposed adjacent to said shaft for collecting working fluid which has leaked from the working chambers past said pistons, a portion of said leaked working fluid being at a higher pressure than the remaining lower pressure portion, said plurality of compressor means adapted to be driven by said connected pistons and shaft, fluid refining means connected



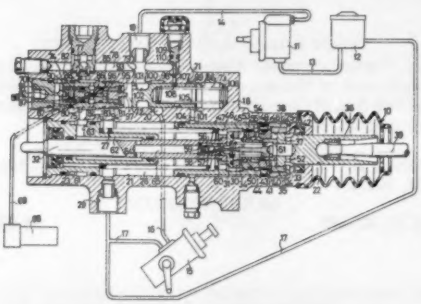
with said compressor means to receive the working fluid collected thereby and refine it, and means for returning the working fluid under pressure to the working chambers.

4,161,867

HYDRAULIC BRAKE BOOSTER

Yoshiharu Adachi, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Continuation of Ser. No. 628,547, Nov. 3, 1975, abandoned. This application Feb. 13, 1978, Ser. No. 877,520
Claims priority, application Japan, Nov. 12, 1974, 49/130224
Int. Cl.[2] B60T 13/14
U.S. Cl. 60—547 A 8 Claims



1. A hydraulic brake booster mechanism for use with a circulating fluid pressure system including a source of continuously circulating fluid pressure, a power steering mechanism, and a passage means for connecting said source and said power steering mechanism, comprising:

a housing disposed within said passage means and having an inlet port for receiving said fluid pressure from said source and an outlet port communicating with said power steering mechanism;

an input piston means slidably disposed within said housing and operatively associated with a brake pedal;

a power piston means slidably disposed within said housing for energizing a master brake cylinder;

a control chamber interposed between said input and power piston means for actuating said power piston means;

a control valve means actuated by said input piston means and movable between a first position wherein said control chamber receives the fluid pressure from said source and a second position wherein the fluid pressure within said control chamber is drained from said control chamber to a reservoir;

a spool valve means slidably disposed within said housing and including a variable orifice means for controlling said

passage means and a biasing means for biasing said spool valve means in a direction in which said orifice means is throttled, said spool valve means further comprising a first pressure receiving area which is subjected to the fluid pressure modulated by said control valve means for biasing said spool valve means in said direction, and a second oppositely disposed pressure receiving area which is subjected to the fluid pressure from said source;

an accumulator means for accumulating an emergency supply of fluid pressure; and

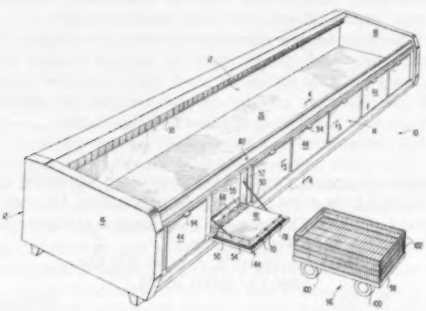
a change-over valve means, disposed within said housing so as to be operable independent of operation of said input piston means and said brake pedal and be actuated solely by said spool valve means which is displaced by said biasing means upon a failure of said source, for delivering said emergency fluid pressure to said control chamber upon actuation of said control valve means.

4,161,868

REFRIGERATOR WITH FRONT ACCESS MEANS

Thomas E. Kennedy, Niles, Mich., and Thomas H. Thompson, Mishawaka, Ind., assignors to Tyler Refrigeration Corp., Niles, Mich.

Filed Dec. 21, 1977, Ser. No. 862,932
Int. Cl.[2] A47F 3/04
U.S. Cl. 62—256 **15 Claims**



1. A refrigerator case for supporting items therein for display and self-service to customers comprising:

(a) a well portion enclosed by a bottom portion, a front wall, a rear wall, and a top portion, said top portion providing access to items contained in said well portion of the case;

(b) said case including means for refrigerating items contained in said well portion;

(c) said front wall having access means for providing access through said front wall to said well portion to expose said well portion for loading and unloading goods for display, said access means including a panel member hingedly secured to said front wall for movement between an open position for exposing at least a part of said well portion for loading and unloading goods through said front wall and a closed position for closing said front wall, wherein said panel member is generally rectangular in configuration, having a top edge, a bottom edge, a first side edge, and a second side edge, said panel member being hinged along said bottom edge to said front wall for pivotal movement of said panel member downwardly away from said front wall, said panel member further including securing means adjacent said top edge, said front wall having complementary securing means to cooperate with said securing means on said panel member for maintaining said panel member in a closed position and releasing said panel member from said front wall for pivoting said panel member to said open position; and

(d) means for restraining the movement of the panel member beyond a predetermined position when said panel member is moved to said open position;

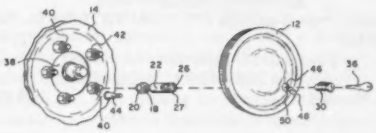
wherein said well portion includes a bottom well wall, a front well wall and a rear well wall, said bottom well wall being generally planar in configuration, said panel member defining an inner surface and an outer surface, said inner surface defining a substantially planar configuration and said restraining means co-operating with a part of said front wall and said panel member to maintain the inner surface of said panel member when in said open position substantially coplanar with the well bottom wall for allowing items to be readily moved on a substantially coplanar surface along the inner surface of said panel into said well portion of the case.

4,161,869

WHEEL COVER LOCK

James R. Dixon, 591 N. 30th St., Apt. Q 12, Camden, N.J. 08105

Filed Mar. 8, 1978, Ser. No. 884,585
Int. Cl.[2] B65D 55/14
U.S. Cl. 70—166 **1 Claim**



1. A wheel cover lock comprising:

an elongated cylindrically shaped bolt having a nut coaxially and fixedly secured to one end thereof such that said bolt and said nut will always move in unison with each other, said nut being adapted to be secured to one of the wheel lugs of a vehicle;

a substantially cylindrically shaped tumbler housing coaxially threaded onto the other end of said bolt such that the distance between said nut and said tumbler housing is adjustable by rotating said tumbler housing relative to said bolt, the free end of said tumbler housing having an annularly shaped end wall, a slot formed in said end wall and extending across the entire diameter thereof, said slot being adapted to receive the tip of a screw driver;

a tumbler member adapted to cooperate with said tumbler housing, said tumbler member including a first portion adapted to pass through a hole in a wheel cover so as to cooperate with said tumbler housing and a second larger portion which is incapable of passing through said hole, said tumbler member including a means extending therefrom adjacent said second larger portion which is adapted to cooperate with said wheel cover to prevent rotation of said wheel cover lock relative to said wheel cover.

4,161,870

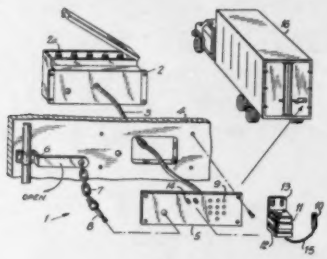
MOBILE CARGO-CONTAINER LOCK

Robert W. Barnes, Levittown, Pa., assignor to Lavelle Aircraft Company, Newtown, Pa.

Filed Jan. 12, 1978, Ser. No. 868,881
Int. Cl.[2] E05B 49/00
U.S. Cl. 70—278 **12 Claims**

1. A method of locking and unlocking a mobile cargo-container door, having a mechanical latching arrangement operated by a lever-type door handle on the exterior side of said door, said method comprising: for the locking operation, the step of mechanically restraining said handle in the closed position utilizing a de-energized electro-mechanical locking mechanism located on the interior of the cargo container, thereby locking said door latching arrangement in the closed position; and for the unlocking operation, which utilizes an electric power source, the step of operating a signal generating source on the exterior of said container to actuate electronic circuits in

a pre-selected sequence causing the operation of said electromechanical locking mechanism to the unlocked position,



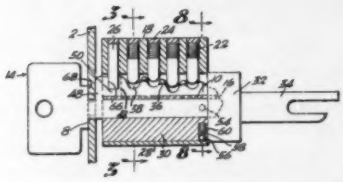
thereby releasing said mechanical restraint on said door handle.

4,161,871

LOCKING MECHANISM

Kurt Ziegler, Park West Villa #77, 11244 SW. 169th St., Miami, Fla. 33157

Filed Jul. 17, 1978, Ser. No. 925,047
Int. Cl.[2] E05B *17/14, 19/06, 27/04*
U.S. Cl. 70—356 **22 Claims**



1. A locking mechanism for use with locks having an outer cylinder with pin box retaining a plurality of movable resiliently urged pins, and bolt with actuating linkage, comprising:

a face plate fixedly attached to an object sought to be locked, and having therein a fixed slot in angular disorientation to a plane of the movable resiliently urged pins;

an inner cylinder in rotationally movable internal concentric relationship to the outer cylinder, having a key slot, and having a pin bar substantially adjacent and parallel to a plane of the key slot, said pin bar having a plurality of biased grooves forming inclined planes of random height; and

means connecting the inner cylinder to the bolt actuating linkage.

4,161,872

ROLLING MILLS

John C. Ashton, Gamston, near Retford, England, assignor to Ashlow Steel & Engineering Company, Limited, Sheffield, England

Filed Jan. 3, 1978, Ser. No. 866,614
Claims priority, application United Kingdom, Jan. 7, 1977, 597/77
Int. Cl.[2] B21B *19/02*
U.S. Cl. 72—95 **1 Claim**

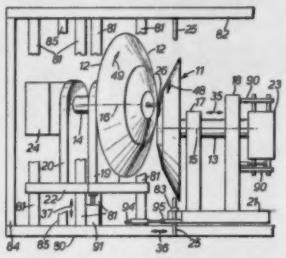
1. A rolling mill comprising:

a pair of generally discus shaped rolling heads each having an axis of rotation and affording opposed rolling surfaces, each said rolling surfaces being inclined at a substantial angle to its said axis of rotation, said axes of rotation lying in spaced parallel planes and said axes of rotation being inlined to one another about a third axis perpendicular to said planes;

means for varying the spacing between said spaced parallel planes;

means for varying the angle of inclination of said rolling heads about said third axis;

means for varying the separation of said rolling heads; and



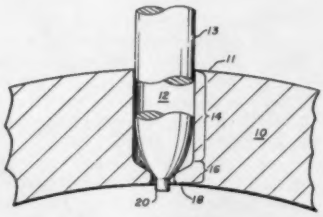
drive means for said rolling heads, said drive means adapted to be capable of rotating said rolling surfaces of said heads in opposite senses relative to each other and at different speeds.

4,161,873

INTERNAL AND EXTERNAL EXTRUDED NIPPLES OR NOZZLES IN PIPE HEADERS OR BOILER DRUMS

Thomas L. Mabery, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 26, 1978, Ser. No. 872,534
Int. Cl.[2] B21D *28/28*
U.S. Cl. 72—324 **10 Claims**



1. A method of forming a hole in a metal part and extruding a nipple on a first surface of a metal part around the hole, the hole extending through the part from the first surface to a second surface on the part, and having a desired diameter, comprising the steps of:

a. forming an initial cylindrical hole in the part, the initial hole having the desired diameter along a first portion extending a major part of the way through the hole from the second surface, the hole having a smaller diameter along a minor second portion extending part of the way into the hole from the first surface; and

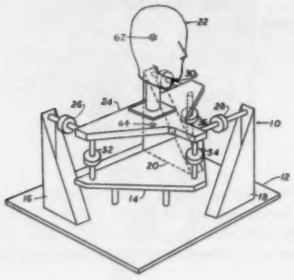
b. forcing a mandrel through the initial hole from the second surface to the first surface, the mandrel having a diameter at its widest point equal to the desired diameter, thereby extruding material forming the smaller portion of the hole into a nipple on the first surface of the part.

4,161,874

HEAD AND NECK IMPACT MEASUREMENT SYSTEM

Lawrence J. Specker, Dayton, Ohio; Aubin M. Higgins, Earlington, Ky., and James W. Brinkley, Kettering, Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 8, 1978, Ser. No. 932,071
Int. Cl.[2] G01M 7/00; G01P 15/00
U.S. Cl. 73—12 2 Claims



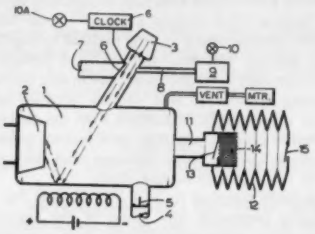
1. A system for measuring head and neck impact forces in a simulated bird-aircraft collision test system, comprising: a movable support member; an anthropometric dummy head and neck member secured to said movable support member; a first fixed support member vertically spaced from said movable support member; a first force measuring load cell connected between the movable support member and said first fixed support member; said first load cell having an active axis passing vertically through the movable support member and the fixed support member a predetermined first distance on one side of the head and neck member; a second fixed support member; a second force measuring load cell connected between the movable support member and said second fixed support member; said second load cell having an active axis passing horizontally through the movable support member and the second fixed support member and intersecting the active axis of said first load cell at a first point of intersection within the movable support member; a third force measuring load cell connected between the movable support member and said first fixed support member; said third load cell having an active axis passing vertically through the movable support member and said first fixed support member a predetermined second distance equal to said first distance on the side of the head and neck member remote from said first point of intersection; a third fixed support member; a fourth force measuring load cell connected between the movable support member and said third fixed support member; said fourth load cell having an active axis passing horizontally through the movable support member and the third fixed support member and intersecting the active axis of said third load cell at a second point of intersection within the movable support member; a fifth force measuring load cell connected between said movable support member and said first fixed support member; said fifth load cell having an active axis passing vertically through the movable support member and said first fixed support member a predetermined third distance forward of said head and neck member; a fourth fixed support member; a sixth force measuring load cell connected between said movable support member and said fourth fixed support member; said sixth load cell having an active axis passing horizontally through the movable support member and the fourth fixed support member parallel to a line passing through the first and second points of intersection in said movable member and intersecting the active axis of said fifth load cell at a third point of intersection within the movable member.

4,161,875

APPARATUS FOR MEASURING THE ALCOHOL PERCENTAGE IN THE BREATH OF AN EXAMINEE

Cornelis C. Stuitje, Zeist, Netherlands, assignor to Detecta-Kraan B.V., Zeist, Netherlands

Filed Jan. 6, 1978, Ser. No. 867,514
Claims priority, application Netherlands, Jan. 20, 1977, 770054
Int. Cl.[2] G01N 31/00
U.S. Cl. 73—23 13 Claims



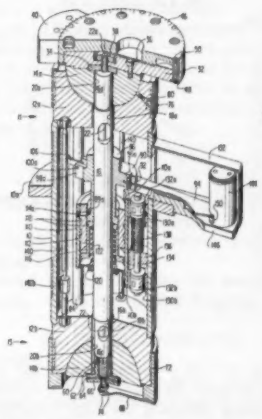
1. Apparatus for measuring the alcohol percentage in the breath of an examinee, comprising an air-tight chamber, inlet and outlet openings in the chamber, an air inlet channel connected with said inlet opening for blowing the breath into the same, an air outlet channel connected with said outlet opening, a check valve arranged in said air outlet channel, a gas detector enclosed by said chamber of which the electric resistance is influenced by alcohol vapor and means responsive to the electric resistance of said gas detector for indicating the alcohol percentage, said gas detector being positioned in the chamber and exposed at all times to the interior of the chamber, the air inlet channel and opening being positioned so that breath blown into the chamber will deflect off of at least one of the inner walls of the chamber before coming in contact with the gas detector.

4,161,876

MASS PROPERTIES MEASUREMENT SYSTEM

David A. Carpenter, Parkton, Md., assignor to MRC Corporation, Hunt Valley, Md.

Filed Mar. 17, 1978, Ser. No. 887,606
Int. Cl.[2] G01M 1/12
U.S. Cl. 73—65 52 Claims



1. A mass properties measurement apparatus, comprising: first and second opposed bearing assemblies, each compris-

ing a fixed bearing and a journal seated in and movable relative to the bearing, the journals of said bearing assemblies being generally part spherically shaped with a generally planar face, the surfaces of the fixed bearings complementing the shape of the associated journals;

rigid connecting means coupled to said first and second journals for substantially securing said journals against movement relative to each other, said connecting means and journals being located relative to said fixed bearings to permit substantially only rotational movement of the journals and connecting means relative to the fixed bearings about a rotational axis, said connecting means including a hollow shaft rigidly secured to the first bearing assembly journal, and a journal preload spring fixed to the second bearing assembly journal, said hollow shaft extending through a central axial bore in said second journal and being secured to said journal preload spring at a location substantially coincident with the radial center of said second journal, whereby said journal preload spring exerts a preloading force between said first and second journals through said hollow shaft;

a support table coupled to said first journal for rotational movement therewith, the plane of the surface of said support table being substantially perpendicular to said rotational axis;

torsion wire means extending substantially along said rotational axis and having an end portion coupled to said support table for rotational movement therewith and its other end portion fixed with one of said bearings against movement relative thereto and against movement with said support table, said torsion wire means controlling oscillatory movement of said support table, said journals, and said connecting means about said rotational axis;

means for limiting the maximum angle through which said support table is rotatable in oscillatory movement; and

means for measuring successive periods of oscillation of said support table to determine mass properties of a test object mounted on said support table.

4,161,877

METHOD FOR THE DETERMINATION OF THE AXIAL THRUST OF ROLLER BEARINGS

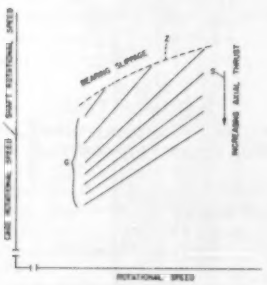
Heinrich F. Bauer, Eichenau; Gerhard Heibling, Munich, and Florian Hildebrandt, Gunding, all of Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union München GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,291

Claims priority, application Fed. Rep. of Germany, Sep. 18, 1976, 2642080

Int. Cl.[2] G01L *5/12*

U.S. Cl. 73—140 **3 Claims**



1. A method for the determination of the axial thrust of roller bearings adapted therefor under extreme operating conditions, comprising obtaining the cage rotational speed from the frequency of the dynamic deflection at a weak point in the side of a stationary component of said roller bearing during operation thereof during roll body over-roll, determining the variation in the bearing cage rotational speed with the shaft rotational speed, and utilizing this value as the measuring magnitude for the axial thrust.

4,161,878

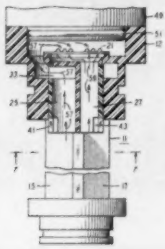
PRESSURE FLUCTUATION FLOWMETER

Theodore J. Fussell, Jr., Bridgewater, N.J., assignor to Neptune Eastech, Inc., Edison, N.J.

Continuation-in-part of Ser. No. 558,155, Mar. 13, 1975, abandoned. This application Sep. 7, 1976, Ser. No. 721,070

Int. Cl.[2] G01F *1/32*

U.S. Cl. 73—194 VS **40 Claims**



1. A pressure fluctuation flowmeter comprising

a bluff body having a base surface facing fluid flow, a pair of converging surfaces extending downstream from said base surface and an orifice adjacent each downstream surface,

means defining a hollow interior,

means bifurcating said orifice and said interior to define a pair of channels in said interior in non-fluid communication with one another,

a substantially planar vibratory sensor having first and second opposite surfaces,

said channels having port means at a same end of said interior for admitting and withdrawing pressure fluctuations into said channels from said bifurcated orifice for communication in a same longitudinal direction toward said sensor, and

means vibratorily mounting said sensor with said first and second surfaces normal to said longitudinal direction and with said first surface communicating with a first one of said pair of channels and said second surface separately communicating with a second one of said pair of channels and thereby to cause said sensor to vibrate in response to pressure fluctuations in said channels.

4,161,879

COMPOSITE TANGENTIAL AND AXIAL EXHAUST FLUID FLOWMETER

Carroll J. Dunne, Jr., Toledo, Ohio, assignor to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 3, 1978, Ser. No. 892,616

Int. Cl.[2] G01F *1/06*

U.S. Cl. 73—229 **28 Claims**

1. A composite tangential exhaust and axial exhaust fluid flowmeter comprising, in combination,

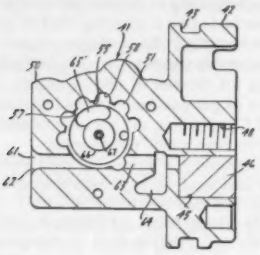
housing means having

a substantially cylindrical cavity for receiving a rotor element therein,

a common fluid inlet port means in direct communication with said cylindrical rotor cavity and directing all of the fluid entering the flowmeter into said rotor receiving cavity,

a plurality of fluid exhaust outlet port means each coupled in series fluidic relation with said fluid inlet port means and in parallel fluid relation to each other, one of said fluid exhaust outlet port means extending generally longitudinally of said housing means and formed generally tangen-

tially of said cavity to exhaust fluid tangentially therefrom and another of said fluid exhaust outlet port means extending transversely of said housing means and formed parallel to the central axis of said cavity to exhaust fluid in a direction axially transversely of said cavity, and a rotor



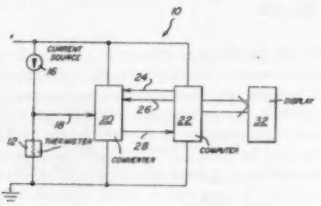
element rotatable in the cavity by all of the fluid entering said housing through said inlet port means and exhausting from said cavity through any of said fluid exhaust outlet port means communicating with said rotor receiving cavity.

4,161,880

LINEARIZED DIGITAL THERMOMETER

Howard S. Prosky, Denver, Colo., assignor to Electromedics, Inc., Denver, Colo.

Filed Jan. 5, 1978, Ser. No. 867,127
Int. Cl.[2] G01N 7/20
U.S. Cl. 73—342 **10 Claims**



1. An electronic thermometer, comprising:

a thermistor having a predetermined non-linear temperature and resistance relationship characteristic;

a source operatively connected for directing a constant current through the thermistor to thereby create an analog voltage across said thermistor related to thermistor temperature by the predetermined temperature and resistance relationship;

visual display means operatively connected in said electronic thermometer for visually displaying an indication of a calculated equivalent temperature as sensed by said thermistor;

converter means operatively connected for receiving the analog voltage across said thermistor and for supplying a digital signal directly related to the analog voltage;

computer means operatively connected for controlling said converter means to supply the digital signal, for calculating an equivalent temperature from the digital signal applied from said converter means, and for operatively controlling said display means to display a visual indication of the calculated equivalent temperature; said computer means including a solid state preprogrammed read only memory containing information in a lookup table defining a predetermined piecewise linearized approximation of the predetermined non-linear temperature and resistance characteristic of said thermistor, the information in said lookup table including slope and constant information for each segment of the piecewise linearized approximation;

said computer means calculating the equivalent temperature for each individual digital signal supplied by said converter means by relating each digital signal from said converter means to the piecewise linearized approximation recorded in the lookup table, by obtaining slope and constant information for each digital output signal from said lookup table, and by digitally performing a first order algebraic calculation with each digital signal and with the slope and constant information obtained for that digital signal, the result of the calculation being the equivalent temperature; and

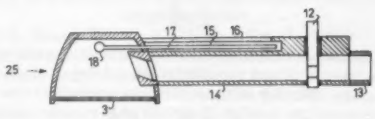
said computer means conducting a signal representative of the equivalent temperature to said display means and controlling said display means to visually display an indication of the equivalent temperature.

4,161,881

HAND SHOWER AND TEMPERATURE INDICATING UNIT

Zeev Raz, 17 Keren Hayessod Str., Beer-Sheva, Israel

Continuation-in-part of Ser. No. 726,099, Sep. 24, 1976, abandoned. This application Aug. 11, 1977, Ser. No. 823,558
Claims priority, application Israel, Oct. 27, 1975, 48730
Int. Cl.[2] G01K 13/02
U.S. Cl. 73—343 R **8 Claims**



1. A hand shower and temperature indicating unit comprising:

a shower head consisting of a water chamber having a perforated water outlet surface and a temperature sensitive means positioned inside the rear of the chamber in close proximity to the opposite back surface of said chamber;

a rigid water conduit section serving as the handle for said unit and integrally attached at one end thereof to the side surface of said chamber at a position between said temperature sensitive means and said perforated water outlet surfaces, said conduit section having at said one end means adapted to direct a water flow towards said temperature sensitive means away from said perforated water outlet surface and having at the free end thereof means for attachment to a water supply line; and

a temperature indicating means positioned within a recess provided in the outer surface of said unit opposite to said perforated water outlet surface and being operationally attached via a wall of said chamber to said temperature sensitive means to indicate the temperature of the water within the chamber.

4,161,882

TEMPERATURE-DEPENDENT ACTUATING MECHANISMS

Peter R. B. Golch, Gloucester, England, assignor to Spirax Sarco Limited, England

Filed Apr. 13, 1978, Ser. No. 896,053
Claims priority, application United Kingdom, Apr. 18, 1977, 16071/77
Int. Cl.[2] G01K 5/42, 5/44
U.S. Cl. 73—368.3 **13 Claims**

1. A temperature dependent actuating mechanism comprising a temperature responsive sensor and an actuator;

the sensor including:

a variable volume chamber,

a temperature responsive means, and

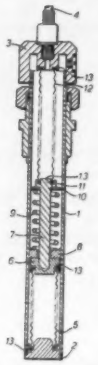
a connection between said variable volume chamber and said temperature responsive means such that change in volume of said means brought about by rise in temperature increases the volume of the interior of said variable volume chamber;

the actuator including:

a chamber,

a variable volume member in this actuator chamber, and

an operating member connected with said variable volume member to move in dependence upon changes in volume of the variable volume member; and



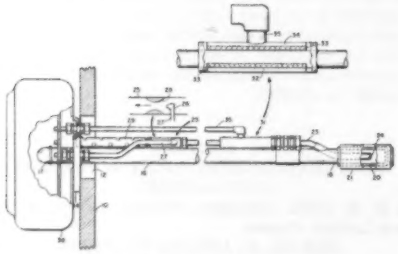
the mechanism further comprising a fluid flow path between the interior of said variable volume chamber of the sensor and said chamber of the actuator whereby increase in the volume of the interior of said variable volume chamber of the sensor permits fluid to flow out of said actuator chamber via said fluid flow path thereby to permit the volume of said variable volume member of the actuator to increase with resultant movement of the operating member of the actuator.

4,161,883

CONDITIONING ASSEMBLY FOR CONTINUOUS STACK MONITORING

James C. Laird, Maxwelton, and Robert L. Tomlin, Lewisburg, both of W. Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed May 23, 1978, Ser. No. 908,868
Int. Cl.[2] G01N *1/24*
U.S. Cl. 73—421.5 A **6 Claims**



1. A probe for collecting samples of industrial gas, comprising

a first tubular conduit having at least one open end;

means supporting said first conduit within a stack containing a stream of industrial gases with the open end of said first conduit extending into said stream;

a second tubular conduit open at both ends, said second conduit penetrating said first conduit so as to intercept at one end of said second conduit flow within said first conduit;

an inertial filter interposed in said second conduit medially of the ends thereof, said inertial filter including a cylinder of porous material open at both ends connected said second conduit to receive and conduct axially through said cylinder gases flowing in said second conduit, said inertial filter further including a covering wall of gas impervious material surrounding the exterior of said cylinder in spaced relationship thereto so as to create a confined space surrounding the exterior of said cylinder;

a second filter of gas pervious material enclosing said open end of said first conduit, the porosity of said second filter being not less than about 100 microns;

means for establishing a relatively high velocity flow of gases from said stack through said second filter, said second conduit and said inertial filter;

means communicating with said confined space of said inertial filter for extracting sample gas at a relatively low velocity flow, the direction of said sample gas flow being substantially orthogonal to the direction of flow of stack gas through said inertial filter; and

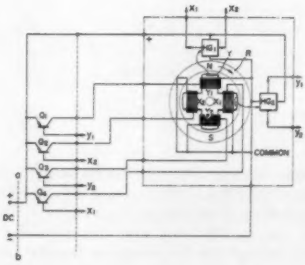
means for periodically applying a blast of pressurized fluid to said first conduit for cleansing said second filter of material trapped therein.

4,161,884

TURN RATE INDICATOR OF AIRCRAFT USING GYROSCOPE

Kouhei Shigenobu, Komae, Japan, assignor to Tokyo Aircraft Instrument Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1978, Ser. No. 894,151
Claims priority, application Japan, Feb. 28, 1978, 53-22542
Int. Cl.[2] G01P *9/02*
U.S. Cl. 73—504 **4 Claims**



1. An aircraft turn rate indicator including a gyroscope having freedom of rotation around at least one axis, comprising:

a housing including an annular member adapted to be secured to the body of said aircraft;

a gimbal mounted within said housing and rotatable with respect to said annular member, said gimbal being returnable to a reference position;

a motor stator having a central axle supported by said gimbal, said stator including a plurality of coils and Hall elements, the central axle of said motor stator being parallel to the pitch axis of said aircraft when said aircraft is not turning;

an outer motor rotor rotatably supported by the central axle of said motor stator at the outer periphery of said stator;

a Hall motor control circuit integrally supported by said gimbal, said control circuit including a plurality of semiconductor devices each thermally coupled to said gimbal and electrically connected to corresponding coils and Hall elements of said motor stator, said semiconductor devices

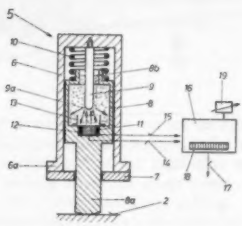
controlling the current through said stator coils in response to signals from said Hall elements;
a plurality of connecting lines for electrically connecting the coils and Hall elements of said stator to said control circuit;
power supply lines for connecting said control circuit to a power source terminal integrally mounted to said housing; and
a pointer driven by said gimbal in accordance with the angular displacement of said gimbal with respect to said annular member.

4,161,885

MEASURING APPARATUS FOR MEASURING THE ROLL GAP IN GAUGE-CONTROLLED ROLL STANDS

Ernst T. Sack, Ratingen-Hosel; Friedrich Nordmeyer, Dusseldorf, and Emil F. Kersting, Ratingen, all of Fed. Rep. of Germany, assignors to Sack GmbH, Dusseldorf-Rath, Fed. Rep. of Germany

Filed May 27, 1977, Ser. No. 801,346
Int. Cl.[2] G01N *9/24*
U.S. Cl. 73—597 **6 Claims**



1. Roll gap measuring apparatus comprising two relatively movable components, a measuring surface on each component, wherein said two components engage one another in a telescoping manner, the inner component having a chamber partfilled with a fluid whose density is substantially constant during temperature changes, and being one of said measuring surfaces, and the outer component having a cup-shaped configuration with an annular cover at one end to permit an elongated projection of the inner component to project outwardly from said outer component, said outer component further including a rod attached to a closed end thereof, said rod being immersed in said fluid contained in said inner component and bearing the other of said two measuring surfaces, a pulsed ultrasonic signal transmitter and a sound receiver located on the same measuring surface, and measuring means for measuring the time taken for sound pulses to travel between said measuring surfaces, means for allowing said fluid to freely expand if the depth of penetration of said immersed rod increases to maintain said constant pressure of said fluid, said fluid container includes a base wall and said signal transmitter and sound receiver are located adjacent thereto, and said measuring surface on said immersed rod is constructed as a spherical reflector for pulses emitted by said transmitter.

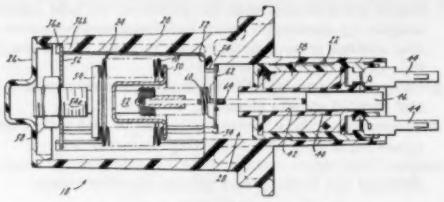
4,161,886

PRESSURE TRANSDUCER AND METHOD

Robert W. Eshelman, Ann Arbor, and Frederick W. Crall, Farmington Hills, both of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Apr. 19, 1978, Ser. No. 897,890
Int. Cl.[2] G01L *9/10, 9/14*
U.S. Cl. 73—722 **6 Claims**

1. In a pressure transducer having a housing within which is disposed a differential pressure sensing element whose axial length is a function of differential pressure applied to the element, the improvement comprising:
means positioning one axial end of the sensing element at a selected location on the housing;
means applying a spring force between the opposite axial end of the sensing element and another selected location on said housing such that axial expansion and contraction of the sensing element reacts with said spring force com-



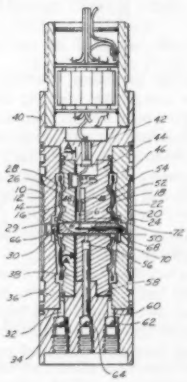
prising a threaded fitting, a helical coil spring coaxial with said threaded fitting having one axial end threaded onto said threaded fitting; and
calibration means effective to selectively set the relative threaded engagement of the coil spring and the fitting comprising means for relatively rotating the fitting and spring.

4,161,887

MEDIA INDEPENDENT DIFFERENTIAL PRESSURE TRANSDUCER

Vaughn L. Stone; Terence K. Rhind; Allen H. Andrews, all of Riverside, and John M. Hendrie, Ojai, all of Calif., assignors to Bourns, Inc., Riverside, Calif.

Filed Sep. 2, 1977, Ser. No. 830,292
Int. Cl.[2] G01L *9/04*
U.S. Cl. 73—720 **7 Claims**



1. A differential pressure transducer comprising
a pressure capsule;
a first isolator chamber means in said pressure capsule for linking external pressures to said capsule having
pressure biasing means for maintaining elevated pressure in said first isolator chamber means, and
first diaphragm means coupling said external pressures to said first isolator chamber means;
a second isolator chamber means in said pressure capsule for linking external pressures to said capsule having
pressure biasing means for maintaining elevated pressure in second isolator chamber means, and
second diaphragm means coupling said external pressures to said second isolator chamber means;
support means for providing mechanical support for said diaphragm means under conditions of overpressure;
a first aneroid sensing means nested in said first isolator

chamber means connected to a moveable spacer tube means transforming external pressures on said capsule coupled by diaphragm means into linear displacements of said aneroid sensing element as a function of the magnitude of the external pressures;

a second aneroid sensing means nested in said first isolator chamber means connected to said moveable spacer tube means transforming external pressures on said capsule coupled by diaphragm means into linear displacements of said aneroid sensing element as a function of the magnitude of the external pressures;

pressure biasing means for maintaining elevated pressures in said aneroid sensing elements;

displacements sensing means connected to said spacer tube means for sensing said linear displacements; and

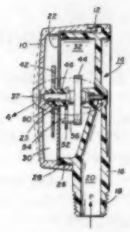
support ring means contoured to the said aneroid sensing elements and forming said isolator chamber means.

4,161,888

PRESSURE GAUGE CONSTRUCTION

Robert D. Bissell, Orange, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed May 22, 1978, Ser. No. 908,482
Int. Cl.[2] G01L *19/02*
U.S. Cl. 73—740 **8 Claims**



1. In a pressure gauge including a hollow casing at least partially defined by a transparent viewing crystal visibly exposing both a dial plate and a pointer displaceable relative to graduations on said dial plate for indicating values of pressure and a Bourdon tube having a fixed end adapted to communicate outward of said casing with a pressure source of value to be measured and a free end operably connected to said pointer for displacing said pointer in response to pressure changes received at said fixed end, zero adjustment calibration apparatus comprising in combination:

(a) an arcuately displaceable shaft interior of said casing and rotatably engaged with said Bourdon tube at a location near the fixed end thereof, said shaft being adapted when arcuately displaced to effect concomitant arcuate displacement of said Bourdon tube and pointer connected thereto;

(b) engagement means on said shaft comprising a tool engageable formation on the end of said shaft operable to effect arcuate displacement thereof; and

(c) an aperture through said casing located opposite said shaft end engagement means to render said tool engageable formation operably accessible from the exterior of said casing for calibrationally positioning said pointer.

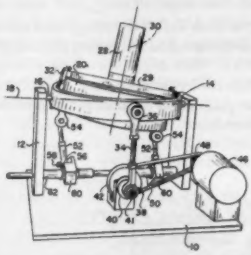
4,161,889

GYROSCOPIC POWER TRANSMISSION SYSTEM

Virgil Hinds, 1950 Miller Rd., Ann Arbor, Mich. 48103

Filed Apr. 8, 1977, Ser. No. 785,943
Int. Cl.[2] G01C *19/02;* **F16H** *3/74, 33/10*
U.S. Cl. 74—5 R **21 Claims**

1. A power transmission system comprising a mass rotating about a first axis, said rotating mass being in a frame pivotably supported by a gimbal about a second axis at right angle to said first axis, pivot means pivotably supporting said gimbal about a third axis at right angle to said second axis and at variable angle relative to said first axis, first power means oscillating said gimbal and said rotating mass frame about said third axis,



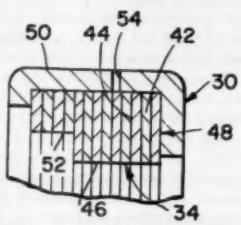
second power means reciprocable by said rotating mass frame when precessionally oscillating about said second axis and biasing means urging said first axis to a position wherein said first axis is orthogonal to said third axis.

4,161,890

FRICTION DRIVE CONTACT ZONE

Alexander Goloff, East Peoria, and Ralph E. Denning, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sep. 6, 1977, Ser. No. 830,542
Int. Cl.[2] F16H *55/32;* **F16D** *69/00*
U.S. Cl. 74—214 **26 Claims**



1. In a friction drive type power transmitting arrangement which comprises first and second substantially rigid members with respective contact portions of said members in frictional engagement at a longitudinally extending contact zone and means for causing a relative velocity of said members at a first end of said contact zone to be different than a relative velocity of said members at a second end of said contact zone, an improvement comprising:

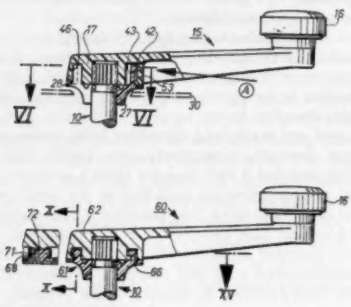
a plurality of generally parallel plates aligned surface to surface with a respective edge of each plate forming a continuous surface with a respective edge of an adjacent plate; and

means for mounting said plates to a respective one of said first and second members with said edges of said plates forming a respective contact portion thereof.

4,161,891
OPERATING HANDLE ATTACHMENT ARRANGEMENT, PARTICULARLY WINDOW CRANK FOR AUTOMOTIVE VEHICLES

Walter Bossert, Geislingen-Weiler, Fed. Rep. of Germany, assignor to Bossert AG, Geislingen, Fed. Rep. of Germany

Filed Apr. 21, 1977, Ser. No. 789,474
Claims priority, application Fed. Rep. of Germany, Apr. 23, 1976, 2617691
Int. Cl.[2] G05G *1/00*
U.S. Cl. 74—548 45 Claims



1. Attachment arrangement to secure an operating handle (15, 60) to a shaft (10) to transmit torque, and rotary movement of the handle to the shaft while inhibiting undesired axial removal of the handle from the shaft while yet permitting controlled removal of the handle, comprising

a coupling element (61) to couple the shaft (10) to the operating handle (60), the coupling element being made of a unitary molding of yielding plastic material formed with an opening therein matching and receiving the shaft therethrough;

interengaging projection and recess means (35) formed on the shaft (10) and on the coupling element (61), respectively, and forming an axial lock to prevent removal of the coupling element from the shaft in axial direction when the projection and recess means are engaged including;

a groove (12) formed in the shaft (10) and

an elastic engagement portion (35) formed on said coupling element (61) and projecting inwardly of the opening and fitting into said groove (12) on the shaft (10) to reliably attach said coupling element to the shaft and prevent axial removal therefrom,

the inwardly projecting portion (35) of the coupling element comprising an at least part circular bead which is radially subdivided into a plurality of inwardly projecting sections;

the operating handle (60) including a hub (62) surrounding the shaft and being formed with a recess to receive a portion of the coupling element (61); and

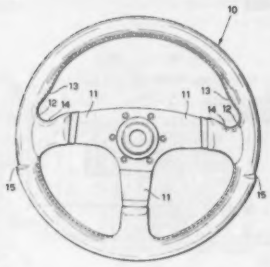
releasable locking means (49; 65, 66, 67, 68, 69; 76, 77) formed on the portion of the coupling element and the hub of the operating handle and engaging the coupling element to the handle when in locked position to connect the handle to the shaft.

4,161,892
STEERING-WHEEL RIM

Giovanni Conterno, Vedano Olona, Italy, assignor to Personal S.p.A., Abbiate Guazzone, Italy

Filed Jun. 29, 1977, Ser. No. 811,177
Claims priority, application Italy, Oct. 29, 1976, 22423 B/76
Int. Cl.[2] B62D *1/04;* G05G *1/10*
U.S. Cl. 74—552 5 Claims

1. A steering-wheel comprising a rim, a central hub, at least two diametrically opposite spokes connecting said rim to said central hub and dividing said rim into upper and lower portions, and hand resting means arranged at the junctions of said two spokes with said rim, said hand resting means comprising a pair of thumb seats each associated with one of said spokes and formed by a projection on the inner side of the upper portion of the rim adjacent the intersection of the respective spoke with said rim and by an adjacent hollow space in the

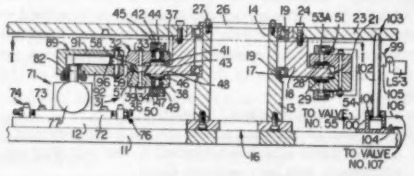


inner side of said upper portion of the rim adjacent the intersection of the respective spoke with said rim and being positioned below said projection and continuing into the upper side of respective spoke, and a pair of rear hand-edge seats each associated with one of said spokes and formed by an upwardly facing shoulder in the outer side of the lower portion of the rim.

4,161,893
ROTARY INDEXING MECHANISM

John W. Black, Hickory Corners, Mich., assignor to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Filed Sep. 16, 1976, Ser. No. 723,925
Int. Cl.[2] B23Q *17/00*
U.S. Cl. 74—813 R 11 Claims



1. An indexing mechanism, comprising:

base means;

cyclical drive means mounted on said base means;

driven means supported for movement relative to said base means and about an axis of rotation, said driven means having an annular radially extending flange the center of which coincides with said axis of rotation;

connecting means including an annular ring supported on and for movement relative to said annular flange for connecting said cyclical drive means to said driven means, said connecting means including coupling means movable into and out of engagement with said driven means and centering means for maintaining the center of said annular ring concentric about said axis of rotation; and

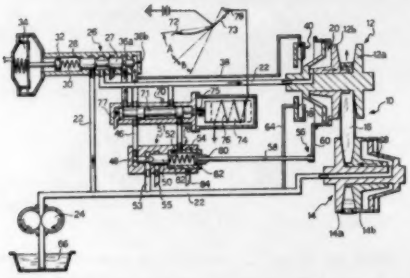
control means for effecting a simultaneous coupling by said coupling means of said drive means to said driven means and a driving of said driven means by said drive means in one direction and a simultaneous uncoupling of said coupling means to uncouple said drive means from said driven means and a driving of said drive means in an opposite direction relative to said driven means.

4,161,894

AUTOMATIC TRANSMISSION DEVICE, WITH BELT TRANSMISSION RATIO VARIATOR, PARTICULARLY FOR MOTOR VEHICLES

Dante Giacosa, Turin, Italy, assignor to Sira Societa' Industriale Ricerche Automotoristiche, Turin, Italy

Filed Nov. 21, 1977, Ser. No. 853,593
Claims priority, application Italy, Nov. 24, 1976, 69792 A/76
Int. Cl.[2] F16H 55/52; B60K 41/12
U.S. Cl. 74—863 8 Claims



1. A transmission device for interposition between the engine and the drive wheels of a motor vehicle, including an automatic transmission ratio variator comprising a driving pulley and a driven pulley, each of which is expandable and formed by two half-pulleys, a transmission belt of trapezoidal cross section interconnecting the two pulleys, a pump which feeds hydraulic fluid under pressure through a delivery pipe to the pulleys so as to cause a variation of the distance between the two half-pulleys forming each of the two pulleys, a control valve interposed between the pump and the driving pulley and having a displaceable member with two opposite faces, means applying to one said face the vacuum in the engine induction manifold, means applying to the opposite said face a fluid pressure which varies in dependence upon the rotational speed of the driving pulley, a modulation valve having two opposite faces which modulates the pressure of the hydraulic fluid delivered by the pump, means applying to one face of the modulation valve the said fluid pressure and means applying to the opposite face of the modulation valve a pressure proportional to the separation of the half-pulleys of one of the said pulleys,

wherein the improvement consists in:

the division of the face of the displaceable member of the control valve which is subjected to the said fluid pressure effectively into two separate faces,

a pressure transducer responsive to the rotational speed of the engine to provide a pressure signal which is applied directly to a first of the said faces of the control valve, and

a selector valve controlling the application of said pressure signal to a second of said control valve faces.

4,161,895

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

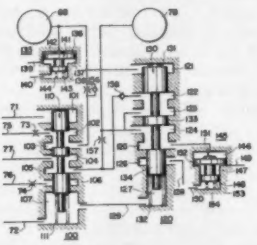
Fmihiro Ushijima, and Kagenori Fukumura, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichiken, Japan

Filed Mar. 3, 1977, Ser. No. 774,118
Claims priority, application Japan, Sep. 13, 1976, 51-108728
Int. Cl.[2] B60K 21/00
U.S. Cl. 74—867 8 Claims

1. In an hydraulic control system for an automatic transmission including: at least first and second engaging members; a transmission for establishing at least two change gear ratios due to selective engagement of said first and second engaging members; a first servo-mechanism for controlling the engagement of said first engaging member for shifting to a high speed; and a second servo-mechanism for controlling the engagement of said second engaging member for shifting to a low speed; said shifting to a high speed being established due to engagement of said first engaging member and release of said second engaging member, and said shifting to a low speed being established due to release of said first engaging member and engagement of said second engaging member; the improvement comprising accumulator means operatively associated with said second servo-mechanism, and a shift timing valve mounted between said accumulator means and said second servo-mechanism for controlling communication of said second servo-mechanism with said accomulator means in response to build-up of pressure to a given level in said first servo-mechanism, wherein said system comprises.

(a) a transmission including first and second servo-chambers;

(b) a shift valve including first, second, third, fourth, fifth, sixth, seventh fluid chambers and a spool, said first fluid chamber being supplied a governor pressure, said seventh fluid chamber being supplied a throttle pressure, said second and sixth fluid chambers being connected to exhaust passages, respectively, said fourth fluid chamber being supplied a line pressure from a pressure regulator, said system operating such that in the upper position of said spool, said third fluid chamber is communicated with said second fluid chamber, a fluid pressure in said third fluid chamber is exhausted, said fifth fluid chamber is communicated with said fourth fluid chamber, and said fifth fluid chamber is supplied a line pressure, and such that in a lower position of said spool, said third fluid chamber is communicated with said fourth fluid chamber,



and supplied a line pressure, said fifth fluid chamber is communicated with said sixth fluid chamber, and a fluid pressure in said fifth fluid chamber is exhausted, said spool having first, second and third lands having the same diameter, said first land controlling the communication between said second and third fluid chambers, said second land controlling the communication between said third and fourth fluid chambers and the communication between said fourth and fifth fluid chambers, said third land controlling the communication between said fifth fluid chamber and said sixth fluid chamber;

(c) a shift timing valve including first, second, third, fourth, fifth, sixth, seventh fluid chambers and a spool, fluid pressure in said first fluid chamber exerting a downward force to said spool, fluid pressure in said seventh fluid chamber exerting an upward force to said spool, said sixth fluid chamber being connected to an exhaust passage, said seventh fluid chamber being supplied a throttle pressure, said spool having first and second and third lands, the diameters of said first land and said second land being the same, the diameter of said third land being smaller than that of said first and second lands, said first land controlling the communication between said second and third fluid chambers, said second land controlling the communication between the third and fourth fluid chambers and the communication between the fourth and fifth fluid chambers and said third land controlling the communication between said fifth and sixth fluid chambers;

and wherein said accumulator means comprise:

(d) a first accumulator for use with said first servo-chamber,

said first accumulator including first, second, third fluid chambers and a spool, said second fluid chamber being supplied a line pressure exerting an upward force to said spool and a fluid pressure in said first fluid chamber exerting a downward force to said spool; and

(e) a second accumulator for use with said second servo-chamber, said second accumulator including first, second, third fluid chambers and a spool, said second fluid chamber being supplied a line pressure, said third fluid chamber being connected to an exhaust passage, fluid pressure in said second fluid chamber exerting an upward force to said spool, and fluid pressure in said first fluid chamber exerting a downward force to said spool;

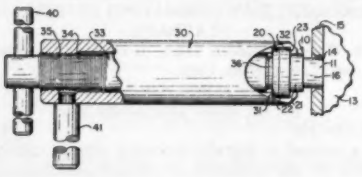
said first servo-chamber being connected to (i) said first fluid chamber in said first accumulator, (ii) said first fluid chamber in said shift timing valve, and (iii) said third fluid chamber in said shift valve by way of an orifice, said second servo-chamber being connected to (i) said third and fourth fluid chambers in said shift timing valve, and (ii) said fifth fluid chamber in said shift valve by way of an orifice, said fifth fluid chamber in said shift valve being connected to said second fluid chamber in said shift timing valve by way of a check valve which allows only a flow of fluid to said second fluid chamber in said shift timing valve, and said fifth fluid chamber in said shift timing valve being connected to said first fluid chamber in said second accumulator.

4,161,896

THEFT PREVENTION ASSEMBLY FOR USE WITH CAR WHEELS

Clark E. Creed, Wethersfield, Conn., assignor to Monarch Machine Company, Inc., New Britain, Conn.

Filed Nov. 30, 1977, Ser. No. 856,002
Int. Cl.[2] B25B *13/06*; F16B *23/00*
U.S. Cl. 81—121 A **4 Claims**



1. The combination of a theft prevention device adapted to be mounted on a wheel mounting stud and a special tool required for its attachment and removal wherein:

A. the theft prevention device comprises:

a. an internally threaded sleeve having a radially expanded end portion, which is flared outwardly to form inner and outer frustoconical surfaces,

b. a ring loosely encircling said end portion and having a rear shoulder for engagement by the tool and an inner frustoconical surface complementary to and engageable with the outer frustoconical surface of the sleeve, and

B. the tool comprises:

a. an elongated tool body having relatively movable clamping members at one end for engagement behind the ring and with the end portion of the sleeve, and

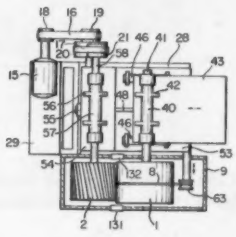
b. means for moving said clamping members together to produce sufficient frictional force to enable the sleeve, ring, and tool to be rotated as a unit.

4,161,897

APPARATUS FOR MANUFACTURING A GLASS FIBER CHOPPED STRAND MAT

Koji Nakazawa; Toshiaki Kikuchi, and Toshihito Fujita, all of Fukushima, Japan, assignors to Nitto Boseki Co., Ltd., Fukushima, Japan

Filed Aug. 24, 1977, Ser. No. 827,272
Claims priority, application Japan, Aug. 25, 1976, 51/101293
Int. Cl.[2] D01G *1/04*; B26D *5/00*
U.S. Cl. 83—73 **5 Claims**



1. An apparatus for manufacturing a chopped strand mat having uniform thickness, comprising,

a frame structure,

a conveyer means disposed below said frame structure,

a cutter roller having a plurality of cutting edges embedded on a peripheral surface thereof,

a first means for rotatably supporting said cutter roller,

a driving means for rotating said cutter roller,

a feed roller for feeding a strand to a cutting position,

a second means having one end pivotably secured to said frame said first means being mounted on said second means,

a third means mounted on said second means for supporting said feed roller in parallel and in contact with said cutter roller to rotate said feed roller with rotation of said cutter roller,

a guide means disposed in a stationary position relative to said feed roller for guiding the strand over said feed roller into between said feed roller and said cutter roller, while reciprocating to move the strand axially of said feed roller,

a detecting means for detecting a deviation of dropping direction of chopped strands from a predetermined direction to provide a control signal indicative of a direction of the deviation,

a fourth means responsive to said control signal for pivoting said second means to change a relative position of said feed roller to said cutter roller and said frame so that the predetermined dropping direction is recovered.

4,161,898

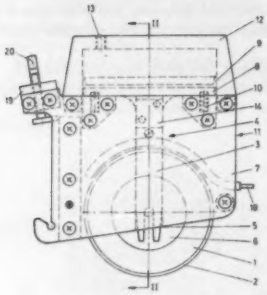
HEATED CUTTING DEVICE

Peter Wingen, Overath, Fed. Rep. of Germany, assignor to Dienes Werke GmbH & Co. K.G., Overath-Vilkerath, Fed. Rep. of Germany

Filed Mar. 3, 1978, Ser. No. 883,255
Claims priority, application Fed. Rep. of Germany, Apr. 14, 1977, 2716703
Int. Cl.[2] B26F *3/10*
U.S. Cl. 83—171 **10 Claims**

1. A cutting device for use in roll slitting machines or the like comprising: carrier means for rotatably carrying a cutting disc, a cutting disc rotatably mounted on said carrier means and having a circular peripheral edge, arcuate electric heating

means for heating said peripheral edge during rotation of said cutting disc, and said heating means being mounted on said



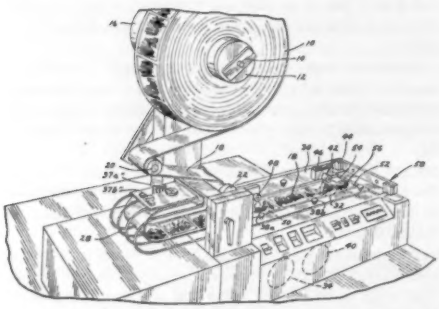
carrier means and extending along an arcuate portion of said peripheral edge in closely spaced relationship thereto.

4,161,899

PHOTOGRAPHIC PAPER CUTTER WITH AUTOMATIC PAPER FEED IN THE EVENT OF OCCASIONAL MISSING CUT MARKS

Gerald R. Strunc, Maple Grove, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Continuation of Ser. No. 837,999, Sep. 29, 1977, abandoned. This application Aug. 24, 1978, Ser. No. 937,250
Int. Cl.[2] B26D *5/34, 7/06*
U.S. Cl. 83—371 25 Claims



1. In a photographic paper cutter for cutting photographic prints from a strip of photographic paper bearing cut indicia, the photographic paper cutter including paper feed drive means for driving the strip along a path, knife means for cutting the strip, and cut indicia sensing means for sensing the cut indicia, the improvement comprising:

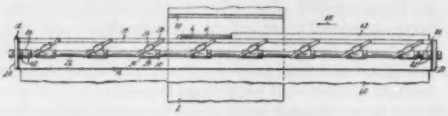
storage means for storing a signal indicative of a total feed length for use if a cut indicium is not sensed within a predetermined portion of a paper feed-and-cut cycle, wherein the signal indicative of the total feed length is a function of the feed length of a previous cycle in which a cut indicium was sensed; and

control means for controlling the paper feed drive means during a paper feed-and-cut cycle, the control means causing the paper feed drive means to drive the strip the total feed length if a cut indicium has not been sensed within a predetermined portion of the paper feed-and-cut cycle.

4,161,900

VENEER EDGING JIG FOR TABLE SAWS

Jeffrey G. Mendelsohn, 11816 W. 99th Pl., Overland Park, Kans. 66214

Filed Feb. 3, 1978, Ser. No. 874,855
Int. Cl.[2] B27B *5/04*
U.S. Cl. 83—409 4 Claims

1. For use in combination with a table saw having a horizontal planar table and a power driven circular saw blade disposed in a vertical plane with its upper portion projecting upwardly through and above a slot of said table, a veneer edging jig comprising:

a. an elongated lower clamp plate adapted to rest slidably on said saw table,

b. an elongated upper clamp plate disposed above and parallel to said lower plate,

c. operating means operable to lower said upper plate forcibly toward said lower plate whereby to clamp veneer sheets therebetween with the portions of said sheets to be trimmed away projecting outwardly between a pair of matching longitudinal edges of said plates, the longitudinal edge portions of said plates, at said matching edges thereof, being formed of a material capable of being cut by said saw blade, and being detachably connected to the remaining portions of said plates, whereby they may be replaced when necessary, and

d. guide means operable, as said lower plate is slidably moved over said table, to confine said movement to a line longitudinal to the plates and parallel to the to the plane of said saw blade, with said matching longitudinal plate edges closely adjacent the vertical plane of the adjacent surface of said saw blade.

4,161,901

DYNAMICALLY ADAPTIVE PLAYER PIANO ROLL TO MAGNETIC TAPE FORMATING SYSTEM AND PLAYBACK

Henry V. Walker, Franklin, Tenn., assignor to Teledyne Industries, Inc., Los Angeles, Calif.

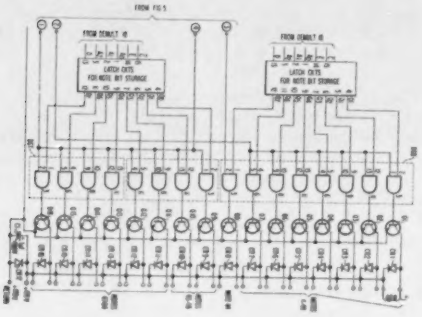
Filed May 2, 1977, Ser. No. 792,847
Int. Cl.[2] G10F *5/00;* G10G *3/04*
U.S. Cl. 84—115 9 Claims

1. In a method of digitally recording musical data on magnetic tape for the recreation of musical performances by a plurality of electronically controlled musical note producing instruments, said musical performances having been previously recorded on player piano rolls as a plurality of parallel data streams in various formats and wherein the streams of parallel data are scanned in sequence for producing, for each data stream, an electrical signal corresponding to the presence or absence of a note to be played in the recreation of said musical performance along with a plurality of parallel data streams carrying expression data bits which vary according to said various formats, said scanning of said streams of parallel data and producing electrical signals being in a sequence to produce a serial musical data stream divided into multiplexed frames of musical data cells, there being at least one data cell in each frame for each one of said plurality of parallel data streams the improvement comprising

providing at least one further group of data cells in said serial data stream for carrying digital code words which identify the format of the musical data as recorded on said player piano roll,

generating a code word unique to each of said various for-

mats and inserting said code words into said data cells for carrying code words,



and magnetically recording said serial musical data streams divided into multiplexed frames of musical data cells on a single channel of a magnetic tape.

4,161,902

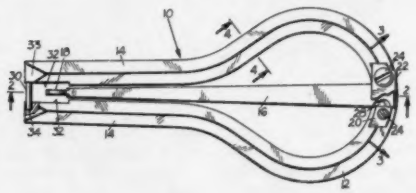
JEW'S HARP

Harry E. Siverson, 4805 SE. 26th Ave., Portland, Oreg. 97202

Filed Jun. 16, 1978, Ser. No. 915,975

Int. Cl.[2] G10D *7/12*

U.S. Cl. 84—375 **13 Claims**



1. A Jew's-Harp comprising

(a) a frame,

(b) said frame having a closed looped end and a pair of arms extending longitudinally from such looped end in spaced relation,

(c) said arms having free end portions opposite from said looped end,

(d) a reed extending between said arms,

(e) means at said looped end of the frame supporting said reed between said arms,

(f) and spacer means having opposite ends removably engaged with respective arms,

(g) said spacer means having lateral engagement with both of said arms to provide selected spacing of the arms and maintain them out of contact with said reed.

4,161,903

FILAMENT TENSIONING DEVICE FOR BOBBINS OF A BRAIDING MACHINE, OR THE LIKE

Vincent Sokol, 93 Sunnyside Dr., Yonkers, N.Y. 10705

Filed Apr. 18, 1978, Ser. No. 897,386

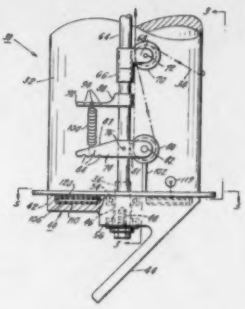
Int. Cl.[2] D04C *3/14*

U.S. Cl. 87—57 **23 Claims**

1. A filament tension regulating device, comprising:

a bobbin for holding filament that is to be unwound under tension; a support bracket for said bobbin with respect to which said bobbin is rotatable as the filament on said bobbin is unwound under tension;

brake means engageable with said bobbin for retarding the rotation of said bobbin with respect to said bracket as the filament is being unwound under tension; said brake means comprising a hydraulic fluid containing chamber; said chamber being connected with said bobbin such that increase in the hydraulic pressure in said chamber applies



greater braking force to said bobbin for retarding rotation thereof and a decrease in the hydraulic pressure in said chamber reduces the braking force applied to said bobbin correspondingly releasing said bobbin to rotate with respect to said bracket;

means connecting the filament being unwound under tension with said chamber in a manner such that the pressure in said chamber varies inversely with the tension of the filament.

4,161,904

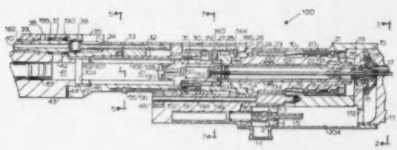
LIQUID PROPELLANT MODULAR GUN INCORPORATING HYDRAULIC PRESSURIZATION OF THE CASE

William Groen, San Jose, and Lester C. Elmore, Portola Valley, both of Calif., assignors to Pulsepower Systems, Incorporated, San Carlos, Calif.

Filed Jun. 6, 1977, Ser. No. 803,442

Int. Cl.[2] F41F *1/04*

U.S. Cl. 89—7 **32 Claims**



29. A liquid propellant gun of the kind in which liquid propellant is burned in a combustion chamber to fire a projectile from the gun and comprising,

a bolt mounted for axial movement between a rearward, projectile loading position and a forward, projectile firing position,

liquid propellant injection means for injecting a liquid propellant into the combustion chamber, said liquid propellant injection means including a propellant control valve and bolt engaging means for moving the control valve to an open position when engaged by the bolt, and

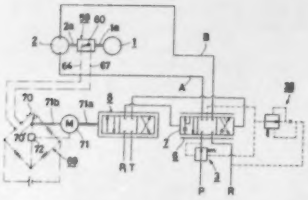
wherein the projectile sensor means are operatively associated with the bolt engaging means for the propellant control valve to open the propellant control valve only when a projectile has actually entered the gun.

4,161,905

HYDRAULIC SERVOMECHANISM

Hiroshi Ota, Tokyo, Japan, assignor to Nisshin Sangyo Co., Ltd., Tokyo, Japan

Filed Jun. 6, 1977, Ser. No. 803,516
Claims priority, application Japan, Jun. 10, 1976, 51/67068
Int. Cl.[2] F15B *9/03, 9/09, 9/12, 13/16*
U.S. Cl. 91—363 R **9 Claims**



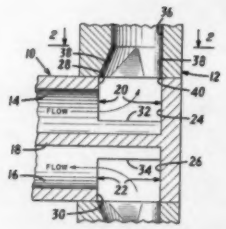
1. A hydraulic servomechanism for synchronizing a motion of a driven element with a motion of a command element, which comprises, in combination, a phase difference detecting means for detecting a difference in the motions of the driven and command elements, a hydraulic fluid conduit means for actuating the driven element, a hydraulic fluid flow control valve having a valve body defining an interior bore, the conduit means being connected to the interior bore a hollow cylindrical spool reciprocably positioned in the interior valve body bore, a pilot spool reciprocably positioned in the hollow cylindrical spool, means for reciprocating the pilot spool in response to the difference in the motions detected by the phase difference detecting means, the hollow cylindrical spool being arranged to be reciprocated in response to the reciprocation of the pilot spool for controlling the hydraulic fluid flow rate, and a pressure compensation valve having a valve body defining an interior bore, in communication with the interior bore of the control valve and, having an inlet for the hydraulic fluid, a fluid path from the inlet to a lower portion of the interior bore of the pressure compensation valve, a spool reciprocably positioned in the interior bore of the pressure compensation valve body, and a spring biasing the spool of the pressure compensation valve in the direction of the lower portion, the reciprocation of the spool being controlled by the spring, by the hydraulic fluid flowing from the inlet into the lower portion and by the hydraulic fluid flowing from the interior bore of the control valve into the interior bore of the pressure compensation valve, and the reciprocation of the spool in the pressure compensation valve body adjusting the flow rate of the hydraulic fluid.

4,161,906

RADIAL PISTION PUMP OR MOTOR HAVING IMPROVED PORTING

Jaromir Tobias, New York, N.Y., assignor to American Hydraulic Propulsion Systems, Inc., Englewood, N.J.

Filed Dec. 8, 1977, Ser. No. 858,561
Int. Cl.[2] F01B *13/06*
U.S. Cl. 91—498 **13 Claims**



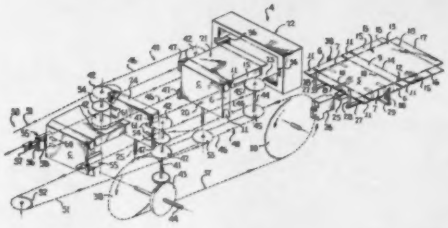
1. In a radial piston hydraulic pump or motor which includes a pintle shaft having supply and return passages communicating from one end thereof with charge and discharge areas that open radially outwardly through charge and discharge ports in the pintle shaft and a cylinder block mounted for rotation about the axis of the pintle shaft, the cylinder block including a multiplicity of circumferentially spaced-apart radial cylinders each of which communicates in sequence with the charge and discharge ports of the pintle shaft by way of a transfer passage in the block which has a port adjacent the pintle shaft, the improvement wherein each transfer passage port is asymmetrical with respect to the centerline thereof in the axial direction, the area of the part of each transfer passage port which lies on the side of the axial centerline remote from the supply and return passages being substantially greater than the area of the remaining part of the port.

4,161,907

CARTON FORMING MACHINE

Robert H. Ganz, Saddle River, N.J., assignor to Ganz Brothers, Inc., Bergenfield, N.J.

Filed Jun. 20, 1977, Ser. No. 808,086
Int. Cl.[2] B31B *1/30, 1/44*
U.S. Cl. 93—51.1 **12 Claims**



1. Apparatus for erecting cartons from flat carton blanks, said apparatus comprising a fixed forming well generally lying in a vertical plane, a plurality of forming heads each of a configuration for cooperating with said folding well for forming a carton blank into an erected carton during the passage of the carton blank through said forming well, first carrier means for moving said forming heads in spaced relation along a closed path including a generally horizontal straight line portion extending through said forming well, sealing means for sealing cartons erected in said forming well in their erected state, second carrier means for moving said sealing means along said path portion in cooperation with said forming heads, stripper members for removing erected and sealed cartons from said forming heads, and third carrier means for moving said stripper members along said path portion in timed relation to movement of said forming heads, and horizontally disposed hopper means for receiving cartons stripped from said forming heads.

4,161,908

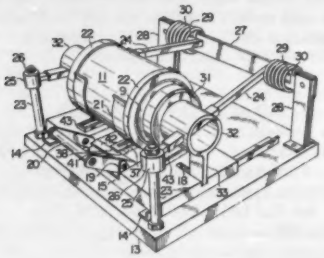
APPARATUS FOR THE PRODUCTION OF WRAPPED FOODS

Kingo Miyahara, Tokyo, Japan, assignor to Dowa Co. Ltd., Tokyo, Japan

Division of Ser. No. 694,680, Jun. 10, 1976, Pat. No. 4,089,982.
This application Aug. 22, 1977, Ser. No. 826,930
Claims priority, application Japan, Jun. 12, 1975, 50-71233; Jun. 12, 1975, 50-71234; Mar. 24, 1976, 51-31454; Mar. 24, 1976, 51-31455
Int. Cl.[2] A23L *3/32*
U.S. Cl. 99—349 **6 Claims**

1. Apparatus for the production of a wrapped food, comprising a base plate having front and rear portions, a carriage mounted on said plate for reciprocatory movement between the front and the rear portions of said base plate, a pair of

support members arranged on said carriage for detachably mounting an electrically insulated container, which container is adapted to receive therein a material foodstuff, a pair of movement guide members each disposed at either end of said container in spaced-apart relation and arranged above said base plate so as to converge from the front to the rear portions of the base plate, the guide members being engaged by the support members, and a pair of electrode plates each mounted on one of said pair of movement guide members and at either end



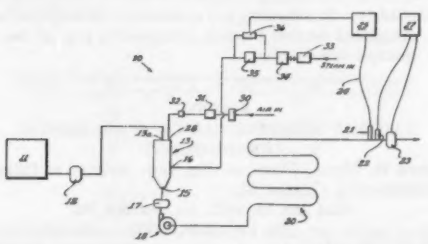
of the container, said electrode plates being in reciprocatory motion together with the reciprocatory movement of said carriage, whereby when the carriage moves from the front portion to the rear portion of the base plate, the pair of electrode plates move into the container so as to be brought into pressure engagement with opposite ends of the material foodstuff, and when the carriage moves from the rear portion to the front portion of the base plate, the pair of electrode plates move out of the container so as to be brought out of pressure engagement with the material foodstuff.

4,161,909

ULTRAHIGH TEMPERATURE HEATING SYSTEM

Alden H. Wakeman, Lake Mills, Wis., assignor to Crepaco, Inc., Lake Mills, Wis.

Filed Sep. 8, 1978, Ser. No. 940,718
Int. Cl.[2] A23C *3/02*
U.S. Cl. 99—453 **9 Claims**



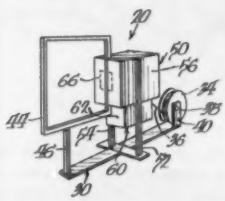
1. An ultrahigh temperature heating system for a liquid product of known specific gravity and specific heat, said system comprising a source of product at a predetermined first temperature; an upright chamber including a product inlet disposed adjacent the upper end portion thereof and communicating with said source for receiving at a predetermined first flow rate the product at the first temperature, an outlet disposed adjacent the lower end portion of said chamber, and a steam inlet disposed intermediate said inlet and outlet through which a controlled amount of steam at a first pressure and at a predetermined second temperature is adapted to flow into said chamber and intermix with the product descending within said chamber and heat same to the predetermined second temperature; first means connected to said chamber outlet for removing from said chamber the mixture of product and steam at a predetermined second flow rate whereby there is no accumulation of same in the chamber lower end portion; second means for exerting a predetermined second pressure on the product and steam removed from said chamber whereby all of the steam is condensed and mixed with the product; and third means connected to said second means for retaining the mixture of the product and steam condensate for a predetermined time interval and at the second temperature and pressure.

4,161,910

STRAP FEEDING AND TENSIONING ASSEMBLY

John H. Leslie, Winnetka, and George A. Crosby, Long Grove, both of Ill., assignors to Signode Corporation, Glenview, Ill.

Filed May 19, 1978, Ser. No. 907,689
Int. Cl.[2] B65B *13/06*
U.S. Cl. 100—26 **13 Claims**



1. A strap feeding and tensioning assembly for a strapping machine having a frame, strap chute and a strap end gripping and sealing unit, said feeding and tensioning assembly comprising:

a strap guide arm pivotably connected on one end to said strapping machine frame;

traction wheel means on said guide arm for feeding and withdrawing a length of strap into and out of said chute;

a gripper means on said guide arm for gripping said strap;

a high tension drive member rotatable on an axis which is fixed relative to, and movable with, said guide arm;

a reversible, rotatable drive motor;

a gear drive assembly means engaged with said motor for separately rotating (1) said traction wheel means to feed said strap and to withdraw said strap when one end is held by said strap end gripping and sealing unit and (2) said high tension drive member to apply a high tension to said strap; and

a high tension reaction means connected to said strapping machine frame for engaging said high tension drive member and transferring the reaction force of said drive member to said strapping machine frame as said drive member is rotated in engagement with said reaction means, whereby said drive member moves along said reaction means causing said guide arm to (1) pivot, (2) actuate said gripper means to grip said strap, and (3) pull the gripped strap thereby drawing said high tension in said strap.

4,161,911

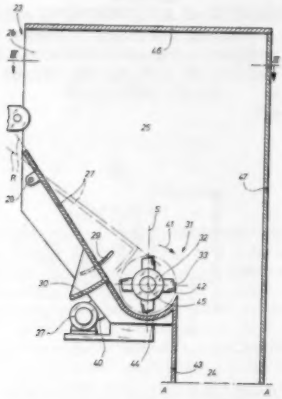
PRESSES FOR BALING WASTE MATERIALS

Anton Schäfer, Langenfeld, and Karl Probst, Solingen, both of Fed. Rep. of Germany, assignors to Lindemann Maschinenfabrik GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Jul. 21, 1977, Ser. No. 817,678
Claims priority, application Fed. Rep. of Germany, Aug. 14, 1976, 2636742
Int. Cl.[2] B30B *15/30*
U.S. Cl. 100—96 **10 Claims**

1. A baling press for processing waste materials such as refuse into bales comprising: a pressing box; a filler shaft connected to said pressing box including a shaft portion for feeding waste material to be pressed from above into said box; a plunger slideably mounted in said box; a driving mechanism for moving said plunger to press waste in said box; an inclined material inlet chute located within said filler shaft through

which waste material may be introduced into said baling press; and a material preparation device located to receive material introduced through said inclined inlet chute for treating said incoming material; said preparation device including a rotor, means mounting said rotor for rotation about a substantially horizontal axis extending across the bottom of said inclined chute, means on said rotor for engaging waste material from said chute and drive means for rotatively driving said rotor in



a given direction; said rotor being arranged at a location between the bottom of said inclined inlet chute and the inlet of said shaft portion, with said inclined inlet chute on one side of said rotor; said given direction of rotation of said rotor being such that as said rotor rotates said one side of said rotor on which said inlet chute is located travels in a generally upwardly directed rotary path to propel material incoming from said chute over and above said rotor before said material reaches said shaft portion.

4,161,912

MINIATURE PRINTER

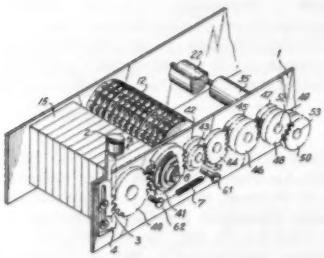
Kiyofumi Usui, and Kozo Kodaira, both of Shiojiri, Japan, assignors to Shinshu Seiki Kabushiki Kaisha, Suwa and Kabushiki Kaisha Suwa Seikosha, Tokyo, both of, Japan

Filed Jun. 6, 1977, Ser. No. 804,047

Claims priority, application Japan, Jun. 4, 1976, 51-65341

Int. Cl.[2] B41J *1/44*

U.S. Cl. 101—99 **19 Claims**



1. A miniature printer for printing a web of paper comprising energy storage means, means for supplying energy to said energy storage means, said energy supplying means being displaceable in a first direction to effect energy storage and being displaceable in a second direction opposite from said first direction during release of the energy stored in said energy storage means, paper feeding means, a plurality of rotatable character rings having a plurality of characters disposed about their periphery, means for selecting a single said character on each of said character rings for printing on said paper, means operatively coupling said energy supplying means and said character selection means for at least in part powering said character selection means during the supply of energy to said energy storage means to effect character selection, means for effecting printing of said characters on said paper and means operatively coupling said energy storage means with said paper feeding means and said printing means to power said paper feeding means and printing means by the energy released from printing means when said energy supplying means is displaced in said second direction but not when said energy supplying means is displaced in said first direction.

4,161,913

RAILWAY TRUCK FRAMES

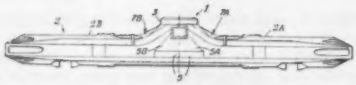
Jean-Claude Guillaumin, L'Etang la Ville, France, assignor to Societe des Acieries de Paris et d'Outreau, Paris, France

Filed Apr. 5, 1977, Ser. No. 784,915

Claims priority, application France, Apr. 12, 1976, 76 010660

Int. Cl.[2] B61F *5/00, 5/04, 5/14, 5/52*

U.S. Cl. 105—200 **5 Claims**



1. In a rigid type bogie-truck for railway rolling stock, comprising a pair of longitudinal side-members and a cross-member connected by butt-welding to each of said side-members in a central area thereof, a connecting appendix rigid with a respective longitudinal side-member in said central area thereof and extending laterally therefrom, said connecting appendix comprising:

a cylindrical portion forming the shape of a connection between the appendix and the cross-member,

an upper substantially flat face,

a lower slightly convex face, said upper and said lower faces extending from said cylindrical portion and flaring out towards the respective longitudinal side-member, and

four swells constituting two pairs of lateral swells, each one of said swells extending and gradually departing from said cylindrical portion towards a respective arm of the respective side-member.

4,161,914

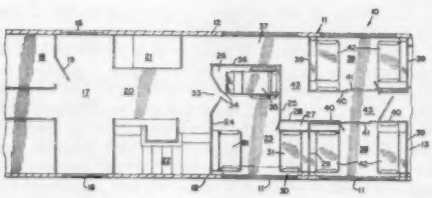
RAILWAY SLEEPING CAR COMPARTMENTAL ARRANGEMENT

Ronald W. Marsh, Michigan City, Ind., assignor to Pullman Incorporated, Chicago, Ill.

Filed Jun. 15, 1977, Ser. No. 806,792

Int. Cl.[2] B60N *3/00*

U.S. Cl. 105—344 **9 Claims**



1. In a passenger car including a car having first and second side walls, a roof and floor structure,

a vestibule in said car,

a first access and exit door in said side walls communicating directly with said vestibule, the improvement of an ar-

rangement for accomodating a wheel chair for handicapped persons comprising,

a first aisle of a width accomodating said wheel chair communicating directly with said vestibule,

an enlarged passenger compartment accomodating a person confined to a wheel chair including a pair of longitudinally spaced walls extending laterally from said first side wall and terminating short of said second side wall,

a longitudinally extending divider wall connecting said longitudinally spaced walls,

a pair of seats within said compartment,

a second access and exit door in one of said longitudinally spaced walls communicating directly with said first aisle and being generally longitudinally aligned therewith, said second door being of substantially the same width as said first aisle thereby accomodating passage therethrough of said wheel chair,

a space within said compartment adjacent to said second access and exit door and being generally longitudinally aligned with said first aisle for accomodating said wheel chair,

said longitudinal alignment of the above mentioned elements providing ease of access and use of said compartment and minimizing essential maneuvering of wheel chairs within the car,

a second aisle of lesser width than said first aisle disposed between said divider wall and said second side wall and communicating with said first aisle,

and additional compartments within said car of lesser size in area than said enlarged compartment disposed remotely from said vestibule and said first aisle, said additional compartments communicating with said second aisle and said second aisle providing a relative passenger boundary between said enlarged and additional compartments.

4,161,915

ADJUSTABLE TABLE

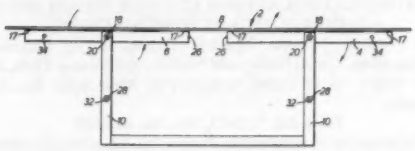
Milan J. Varmuza, London, England, assignor to Avalanche Limited, London, England

Filed Jun. 19, 1978, Ser. No. 916,786

Claims priority, application United Kingdom, Jul. 19, 1977, 30179/77

Int. Cl.[2] A47B *9/00*

U.S. Cl. 108—144 **5 Claims**



1. An adjustable table comprising a table top, a base frame positioned underneath the table top and having four fixed upstanding legs which are arranged in pairs at opposite end portions of the frame, and a support member pivotally attached to the upper end portions of each pair of legs such that it pivots between the legs, the support members being pivotable between their legs from a first position in which the support members support the table top at a first height to a second position in which the support members support the table top at a second and higher height, the support members being horizontal in their first position and vertical in their second position, the table top resting freely on the support members in an unsecured condition as the support members are moved between their first and their second positions whereby the table top remains the same way up when the support members are in their first and their second positions, and the adjustable table including locking means for locking the support members to the upstanding legs when the support members are in their second position.

4,161,916

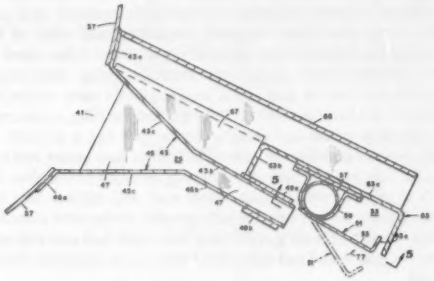
INCINERATION APPARATUS WITH ADJUSTABLE AIR CURTAIN

Robert D. Applegate, P.O. Box 309, Attica, Ind. 47918

Filed Sep. 19, 1977, Ser. No. 834,516

Int. Cl.[2] F23G *3/02*

U.S. Cl. 110—203 **4 Claims**



1. An apparatus for directing a curtain of air into a pit in which material is burning, including an air supply means, an elongated plenum member adapted to be positioned along one edge of the pit, said plenum member being in fluid communication with said air supply means for distributing air along the length thereof, a nozzle means attached to and extending along the length of said plenum and having an outlet for releasing the air from said plenum along its length in a stream moving generally at right angles to the length of said plenum, a vane located adjacent the outlet of said nozzle in proximity to said air stream, said vane being generally aligned with said nozzle, means to vary the position of said vane to change the path of said air stream and a protective member disposed above said vane to prevent falling objects from contacting said vane.

4,161,917

FLUIDIZED BED COMBUSTION APPARATUS

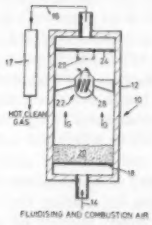
Albert Jubb, Kenilworth, England, assignor to Rolls-Royce Limited, London, England

Continuation of Ser. No. 776,917, Mar. 11, 1977, abandoned. This application Sep. 21, 1978, Ser. No. 944,657

Claims priority, application United Kingdom, Mar. 26, 1976, 12176/76

Int. Cl.[2] F23D *19/00*

U.S. Cl. 110—263 **3 Claims**



1. A fluidised bed combustion apparatus for burning a particulate combustible material fluidised in a particulate inert material to produce heated exhaust gases for use as power, said apparatus comprising: a vessel, a bed of fluidisable inert material and combustible material in said vessel, means for supporting said bed above the bottom of said vessel, said vessel having an inlet for a flow of fluidising and combustion gas positioned beneath and spaced from said bed, said vessel also having an outlet remote from said inlet and positioned above said bed for discharge from said vessel of a flow of the heated exhaust gases

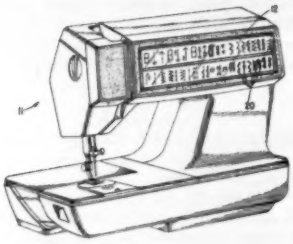
and any entrained completely burnt particulate combustible material, particle separating means in series with and positioned downstream of the outlet of said vessel for separating the completely burnt particulate combustible material from the heated exhaust gases, gas-swirling means positioned in said vessel in spaced relationship above said bed and spaced relationship below said outlet, said gas-swirling means being arranged to impart a swirling motion to the heated exhaust gases, completely burnt particulate combustible material and partially burnt particulate material whereby dwell time of the partially burnt particulate material in the vessel is increased by the partially burnt particulate material being centrifuged towards the wall of said vessel to completely burn within the vessel or fall back to said bed through said swirling means, said gas-swirling means including a central hub and a plurality of static vanes extending between the wall of said vessel and said central hub, each of said vanes having an angle of less than 45° with a vertical axis of said vessel and said central hub and vanes having an axis substantially parallel to the flow direction of the heated exhaust gases rising from said bed towards said outlet of said vessel and coincident with the vertical axis of said vessel.

4,161,918

ROLLOVER AND WIPE PROJECTIVE CIRCUIT FOR AN ELECTRICAL SWITCHING ARRAY

William H. Dunn, Branchville, N.J., assignor to The Singer Company, New York, N.Y.

Filed Feb. 28, 1978, Ser. No. 882,006
Int. Cl.[2] D05B *3/02*
U.S. Cl. 112—158 E **5 Claims**



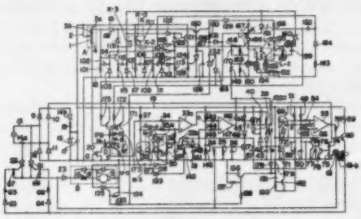
4. In a sewing machine having a plurality of individually selectable operator influenced functions comprising: a touch panel associated with said sewing machine having individual areas thereon sensitive to an operator's touch for individually selecting said sewing machine functions, a plurality of touch pads arranged on said touch panel with a specifically different predetermined combination thereof operatively associated with each one of said touch sensitive areas, an input line from each of said touch pads directed to a protective circuit, means in said protective circuit to scan input signals from said touch pads for establishing and detecting prescribed conditions of operator influence of any of said predetermined combination of said touch pads, means for storing the values of said input signals for a predetermined number of scans and means for comparing these stored values to establish their identicality for rendering any selected one of said operator influenced functions effective, zero input detecting means in said protective circuit responsive to a predetermined set of values of said input signals for generating a signal indicating the absence of operator influence on all of said plurality of inputs, and means in said protective circuit operative upon effectiveness of any operator influenced function by establishment of said prescribed conditions for preventing selection of another operator influenced function until a signal is received from said zero input detecting means.

4,161,919

MOTOR CONTROL SYSTEM FOR SEWING MACHINE

Koji Nishida, Nagoya; Taneichi Kawai, Anjyo; Shigemitsu Hamajima, Anjyo; Nobuyoshi Nagura, Anjyo, and Tsuneo Hida, Anjyo, all of Japan, assignors to Aisin Seiki Co., Ltd., Japan

Filed Jul. 7, 1977, Ser. No. 813,624
Claims priority, application Japan, Jul. 23, 1976, 51-88542; Jul. 23, 1976, 51-88543
Int. Cl.[2] D05B *69/22*
U.S. Cl. 112—275 **19 Claims**



1. A motor control system for a sewing machine having a foot controller with a stop position, a motor with an armature winding, and at least one motor drive thyristor serially connected to the motor, comprising:

a shunt thyristor parallelly connected with the armature winding of the motor in the sewing machine;

deceleration detector circuit means for detecting the fall of motor speed into a predetermined threshold level and generating a deceleration detection signal;

means for producing a stop signal when the foot controller is moved to its stop position;

brake command circuit means for receiving the deceleration detection signal from the deceleration detector circuit means and the stop signal, and generating a brake command signal to operate the shunt thyristor in a shunt mode; and

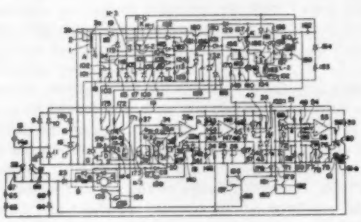
trigger phase clamp circuit means for receiving the brake command signal and clamping the trigger phase of said at least one motor drive thyristors.

4,161,920

MOTOR CONTROL SYSTEM FOR ONE STITCH SEWING CONTROL OF A SEWING MACHINE

Koji Nishida, Nagoya; Taneichi Kawai, Anjyo; Shigemitsu Hamajima, Oobu; Nobuyoshi Nagura, and Tsuneo Hida, both of Anjyo, all of Japan, assignors to Aisin Seiki Co., Ltd., Japan

Filed Jul. 7, 1977, Ser. No. 813,625
Claims priority, application Japan, Jul. 23, 1977, 52-88546
Int. Cl.[2] D05B *69/22*
U.S. Cl. 112—275 **19 Claims**



1. A motor control system for one stitch sewing control of a sewing machine having motor drive thyristors, a trigger phase indication circuit means for controlling operation of the motor drive thyristors and a comparator circuit means for generating a trigger phase indication signal to accelerate or decelerate

motor speed into an indicated speed which corresponds to a down position of a foot controller, characterized in that the system further comprises:

a start pulse generator circuit means for detecting the down position of the foot controller and generating a pulse;

a first needle position detector means for detecting the arrival of the sewing needle at a first predetermined halt position;

a second needle position detector means for detecting the arrival of the sewing needle at a second predetermined halt position;

a first memory circuit which is energized by the pulse from the start pulse generator circuit means and which is deenergized by the first needle position detector means;

a one stitch sewing speed indication signal generator means, which is energized by the energization of the first memory circuit, for supplying a one stitch sewing speed indication signal to the comparator circuit means;

a second memory circuit which is energized at the time the first needle position detector means deenergizes the first memory circuit means and which is deenergized by the second needle position detector means; and

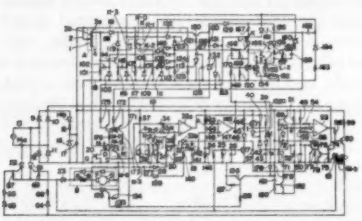
a predetermined constant trigger phase command signal generator means, which is energized by the second memory circuit means, for supplying a predetermined constant trigger phase command signal to the comparator circuit means.

4,161,921

MOTOR CONTROL SYSTEM FOR SEWING MACHINE

Koji Nishida, Nagoya; Taneichi Kawai, Anjyo; Shigemitsu Hamajima, Oobu; Nobuyoshi Nagura, and Tsuneo Hida, both of Anjyo, all of Japan, assignors to Aisin Seiki Co., Ltd., Japan

Filed Jul. 7, 1977, Ser. No. 813,626
Claims priority, application Japan, Jul. 23, 1976, 51-88544
Int. Cl.[2] D05B *69/22*
U.S. Cl. 112—275 **27 Claims**



1. A motor control system for a sewing machine having motor drive thyristors, trigger phase indication circuit means for controlling operation of the motor drive thyristors, comparator circuit means for generating a trigger phase indication signal to accelerate or decelerate motor speed into an indicated speed which corresponds to the down position of a foot controller, means for generating a stop signal when the foot controller is moved to its stop position, and brake means for stopping the motor, wherein the improvement comprises:

needle position detector means for detecting the arrival of the sewing needle at a predetermined stop position;

predetermined constant trigger phase command circuit means, which is energized by the stop signal, for supplying a predetermined trigger phase indication signal to the comparator circuit means to decelerate motor speed; and

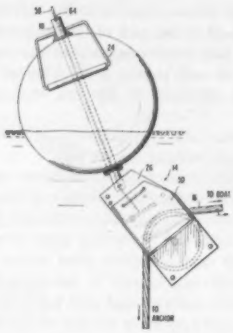
brake command circuit means, which is energized by the stop signal, for supplying a brake command signal to a brake means when the needle position detector means detects the arrival of the sewing needle at the predetermined stop position.

4,161,922

ANCHOR CADDY

Francis Fogg, Scotia, N.Y., assignor to Fish-N-Mate Ltd., Gloversville, N.Y.

Filed Mar. 1, 1978, Ser. No. 882,402
Int. Cl.[2] B63B *21/22*
U.S. Cl. 114—297 **10 Claims**



1. An anchor caddy device for mounting on a boat anchor line between the boat and the anchor, said device comprising:

a float having an upper and a lower portion, the upper portion normally riding out of the water when the float is disposed therein;

a housing mounted adjacent the lower portion of said float, said housing defining a passage therethrough for an anchor line;

releasable dogging means mounted in the passage through said housing for normally engaging an anchor line when the line extends therethrough to permit one way movement of the line, only, responsive to a force exerted thereon in the direction of the boat;

latch means mounted on the upper portion of said float and coupled to said dogging means for selectively releasing said means so that when an anchor line extends through the passage, two way movement of the line therethrough will be permitted;

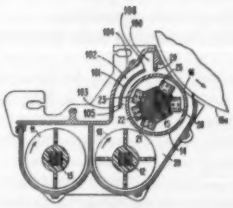
deflector means carried by said housing and actuated by a force exerted thereon in the direction of the boat when an anchor line extends therethrough for restricting movement of said device responsive to said force.

4,161,923

ELECTROPHOTOGRAPHIC DEVELOPER WITH CARRIER OVERFLOW CONTROL

Jerry J. Abbott; William J. Bernardelli, both of Longmont; John A. Thompson, Boulder, and Allison H. Caudill, Lafayette, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,496
Int. Cl.[2] G03G *13/09*
U.S. Cl. 118—658 **8 Claims**



1. A magnetic-brush developer for use in an electrophotographic machine wherein a developer material comprising a

toner-coated magnetic carrier is supplied to a rotating magnetic-brush roll at a pickup zone to be transported by said roll to an elevated development zone, said developer comprising:

a housing means for enclosing said roll and holding said developer material, said housing means being open at said development zone;

said magnetic-brush roll comprising a rotating hollow roll with magnetic means disposed within said roll for creating a magnetic field in the path of the periphery of said roll;

means to bring said developer material into contact with the roll surface at said pickup zone whereat the carrier is magnetically attracted to the roll surface and moved therewith;

a doctoring blade located adjacent to the development zone opening in said housing means; and

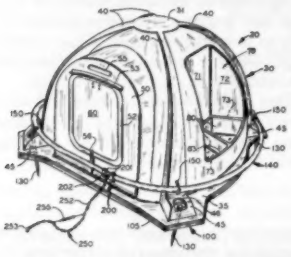
an overflow plate means mounted between said roll and the inner surface of said housing means and extending from an end adjacent to said pickup zone to an end spaced substantially apart from said doctoring blade to provide a first path between said overflow plate means and said roll through which said carrier is transported toward said doctoring blade and a second path between said overflow plate means and said inner surface of the housing means through which said carrier can fall back into said pickup zone when said carrier is accumulated in excess amounts behind said doctoring blade.

4,161,924

SHELTER

Scott D. Welker, 1359 Winnette, Toledo, Ohio 43614

Filed May 9, 1977, Ser. No. 795,107
Int. Cl.[2] A01K *1/02*
U.S. Cl. 119—19 **45 Claims**



1. A shelter comprising:

(A) a housing having an opening for a door and an outside feeding stall, and

(B) an endless track surrounding and near the base of said housing and outside said feeding stall,

(C) a glide on said track, and

(D) a tether attached to said glide.

15. A shelter for animals comprising:

(A) a base having floor with a downwardly offset peripheral flange,

(A) a cover for said base having a downwardly offset peripheral flange seating in said base peripheral flange, and an animal opening in said side of said cover,

(C) a continuous rail track completely around the lower edge of said cover above said flanges,

(D) a glide on and movable along said track,

(E) a tether having one end attached to said glide, and

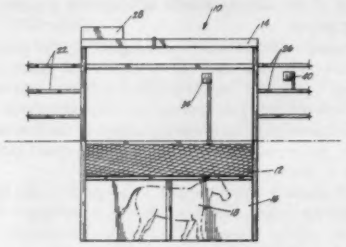
(F) a plurality of spaced pin means penetrating said flanges for anchoring said cover and said base to their supporting surface.

4,161,925

ELECTRONIC CONTROLS FOR AUTOMATICALLY OPERATING A CATTLE DIPPING VAT

Donald W. Whitson, Scott City, Kans., assignor to All Phase Electronics, Inc., Scott City, Kans.

Filed Dec. 9, 1977, Ser. No. 859,233
Int. Cl.[2] A01K *13/00*; A61D *11/00*
U.S. Cl. 119—158 **7 Claims**



1. An electrical control device for automatically operating a cattle dipping vat, the vat having a tank containing sufficient dipping fluid to allow an animal to be immersed therein, a cage for receiving the animal therein and suspending the animal above the tank, the vat having a cage frame with a front door and a back door, the vat having hydraulic cylinders for lowering and raising the cage in the tank and opening and closing the front and back door, the device comprising:

a first sensing means for determining the presence of an animal in the cage;

a first hydraulic switch means connected to said first sensing means and the hydraulic cylinder, said first hydraulic switch means turned on when the animal is in the cage and closing the back door;

a second sensing means for determining when the back door is closed connected to said first hydraulic switch means and turning off said first hydraulic switch means;

a second hydraulic switch means connected to said second sensing means and the hydraulic cylinder, said second hydraulic switch means turned on for lowering the cage into the tank after the back door has been closed;

a third sensing means for determining when the cage is at the bottom of its travel in the tank connected to said second hydraulic switch means and turning off said second hydraulic switch means;

a third hydraulic switch means connected to said third sensing means and the hydraulic cylinder, said third hydraulic switch means turned on for raising the cage from the tank when the cage has reached the bottom of its travel;

a fourth sensing means for determining when the cage is at the top of its travel when raised from the tank connected to said third hydraulic switch and turning off said third hydraulic switch means;

a fourth hydraulic switch means connected to said fourth sensing means and the hydraulic cylinder, said fourth hydraulic switch means turned on for opening the front cage door when the cage is at the top of its travel;

a fifth sensing means for determining when the front cage door is open connected to said fourth hydraulic means the turning off said fourth hydraulic switch means;

a sixth sensing means connected to said first sensing means to determine when the animal has exited the cage and the cage is empty;

a fifth hydraulic switch means connected to said sixth sensing means and to the hydraulic cylinder, said fifth hydraulic switch means turned on for closing the front cage door when the animal has exited the cage;

a seventh sensing means for determining whent the front cage door is closed, connected to said fifth hydraulic

switch means and turning off said fifth hydraulic switch means;

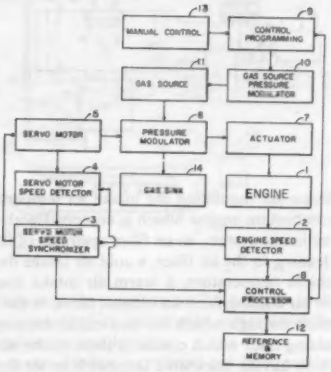
a sixth hydraulic switch means connected to said seventh sensing means and to the hydraulic cylinder activator, said sixth hydraulic switch means turned on for opening the back cage door when the front cage door is closed; and

an eighth sensing means for determining when the back cage door is open and connected to said sixth hydraulic switch means and turning off said sixth hydraulic switch means.

4,161,926
ENGINE PARAMETER MODULATION

Uriel Vogel, P.O. Box 408, Huntington, N.Y. 11743

Filed Apr. 6, 1977, Ser. No. 785,103
Int. Cl.[2] F02B *33/00*; F02M *7/12*
U.S. Cl. 123—32 EA 14 Claims



1. Method for creating an engine parameter control signal to obtain an optimum operating point of said engine, comprising:

creating a supply of pressurized gas flow,

directing said gas flow to and through a chamber,

modulating the gas flow through the chamber at a certain speed by means whereby pressure of said gas in said chamber is correspondingly modulated,

leading said modulated gas pressure to a means responsive to gas pressure whereby an engine parameter is modified,

measuring modulation of an output of said engine due to modulation of said parameter whereby the measured modulation of said output is a measure of deviation of an operating point of said engine from an optimum operation point,

generating a control signal from said measure of deviation from said optimum operating point,

controlling said supply of pressurized gas flow to said chamber according to said control signal, whereby the pressure of said supply is changed,

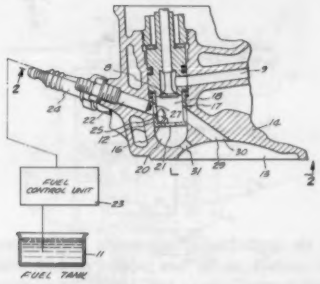
detecting the speed of said engine and synchronizing the speed of said modulation of gas flow with said engine speed whereby any point of said modulation corresponds to a fixed phase of rotation of the engine regardless of speed of said engine, and

isolating the modulation means from vibration and noise of said engine, whereby the operating point of said engine is shifted towards said optimum operating point.

4,161,927
FUEL INJECTION FOR DIVIDED AUXILIARY CHAMBER OF ENGINE

Shizuo Yagi, Asaka; Isao Fujii, Hasuda, and Hiroshi Kogure, Tokorozawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,513
Int. Cl.[2] F02B *19/18*, *75/02*
U.S. Cl. 123—75 B 4 Claims



1. In an internal combustion piston engine having a main combustion chamber, the combination of: means forming an auxiliary combustion chamber, means dividing said auxiliary combustion chamber into a primary cavity and a secondary cavity, an opening connecting said primary and secondary cavities, spark ignition means communicating with said primary cavity, means for supplying a relatively lean air-fuel mixture to said main combustion chamber, means including a fresh air intake passage and an auxiliary intake valve for supplying fresh air to said primary cavity and into said secondary cavity, means including a fuel injector for supplying fuel during the intake stroke to mix with the fresh air to form relatively rich air-fuel mixtures in both of said cavities, a relatively long primary torch passage extending from said primary cavity to said main combustion chamber and having an outlet end positioned near the center of said main combustion chamber, and a relatively short secondary torch passage extending from said secondary cavity to said main combustion chamber and having an outlet end positioned adjacent a peripheral zone of said main combustion chamber.

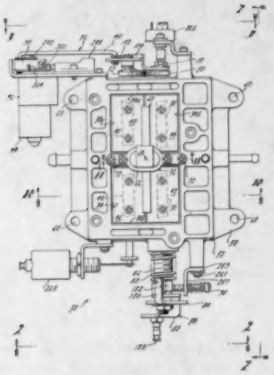
4,161,928
THROTTLE BODY ASSEMBLY

Kenneth W. Teague, Dayton, Ohio, and Kenneth A. Graham, Beverly Hills, Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Continuation of Ser. No. 719,021, Aug. 30, 1976. This application Jul. 17, 1978, Ser. No. 925,572
Int. Cl.[2] F02D *11/10*
U.S. Cl. 123—102 3 Claims

1. In a throttle body assembly comprising a throttle body defining an induction passage, throttle shaft structure rotatably mounted on said throttle body, throttle blade structure disposed in said induction passage and operable by selective rotation of said throttle shaft structure to selectively throttle said induction passage, actuating means for rotating said throttle shaft structure and operating said throttle blade structure from a preset basic idle position over a range of positions, said actuating means including a first element affixed to said throttle shaft structure, a second element, and a lost motion connection coupling said first and said second elements which permits rotation of said throttle shaft structure within a limited initial increment of said range without imparting motion to said second element, means for both establishing the preset basic idle position and sensing when said second element is in a position which will allow said throttle blade structure to oc-

cupy the preset basic idle position comprising an adjustment element disposed on said throttle body for abutment by said second element, means biasing said second element toward abutment with said adjustment element, said actuating means further including means for moving said second element against the bias of said biasing means to selectively rotate said throttle shaft structure and operate said throttle blade structure over said range, an electrically actuated prime mover, a rotary



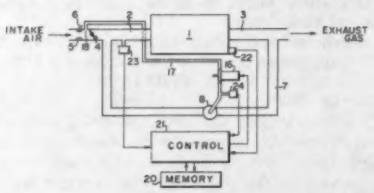
output shaft driven by said prime mover, a crank arm affixed to said output shaft, means operatively coupling said throttle shaft structure and said crank arm for causing said throttle shaft structure to rotate when said output shaft is driven by said prime mover, and an electric circuit for operating said prime mover including a circuit connection which senses when said second element is in abutment with said adjustment element to permit operation of said prime mover only when such abutment occurs.

4,161,929

EXHAUST GAS RECIRCULATION CONTROL SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Hidetaka Nohira, Mishima; Kiyoshi Kobashi, Susono, and Jiro Nakano, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Japan

Filed Nov. 1, 1977, Ser. No. 847,434
Claims priority, application Japan, Aug. 30, 1977, 52-103953
Int. Cl.[2] F02M *25/06*
U.S. Cl. 123—119 A **9 Claims**



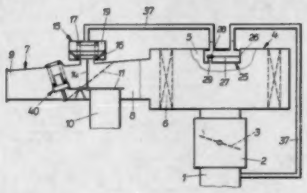
1. An exhaust gas recirculation control system for an internal combustion engine, comprising a passage for conducting exhaust gases to be recirculated, a diaphragm type exhaust gas recirculation control valve having a diaphragm chamber and controlling said passage in accordance with the fluid pressure supplied to said diaphragm chamber, a pressure control valve for controlling said fluid pressure, a pressure sensor for detecting said fluid pressure, a memory means for retaining target values for said fluid pressure which provide the optimum exhaust gas recirculation in various operating conditions of the engine, said operating conditions of the engine being expressed by the combination of two quantities selected from the rotational speed, amount of intake air, and intake manifold vacuum of the engine, means for detecting current values of said two selected quantities, and a control means which reads out a particular target value for said fluid pressure from said memory means in accordance with the current values of said two selected quantities, compares the read-out target value with the value of said fluid pressure detected by said pressure sensor, and controls said pressure control valve so as to accord said fluid pressure to the read-out target value.

4,161,930

DEVICE FOR REGULATING THE INTAKE AIR TEMPERATURE OF A CARBURETOR-EQUIPPED INTERNAL COMBUSTION ENGINE

Lothar Bendig, Ludwigsburg, and Rolf Flisser, Freiberg am Neckar, both of Fed. Rep. of Germany, assignors to Filterwerk Mann & Hummel GmbH, Ludwigsburg, Fed. Rep. of Germany

Filed Feb. 14, 1978, Ser. No. 877,765
Int. Cl.[2] F02M *31/00*
U.S. Cl. 123—122 D **7 Claims**



1. A device for regulating the intake air temperature of an internal combustion engine which is equipped with a carburetor in its air intake system, an air filter upstream of the carburetor, and, leading to the air filter, a cold air intake duct for raw air of ambient temperature, a warm air intake duct for preheated raw air coming from an exhaust stove or the like, and a duct junction through which the two intake ducts open into a raw air mixing duct which connects them to the air filter, the duct junction having associated therewith an air flow proportioning valve which, in a first end position, opens the cold air duct while closing the warm air duct and, in a second end position, closes the cold air duct, while opening the warm air duct, the air temperature regulating device comprising in combination:

a pneumatic actuator operatively connected to the air flow proportioning valve in such a way that negative air pressure supplied to the actuator will move the valve in the direction towards said second end position, in opposition to a return spring biasing the valve towards said first end position;

a vacuum line supplying negative air pressure to the pneumatic actuator from a point downstream of the carburetor;

a temperature-controlled pressure relief valve arranged in the vacuum line, at a point at which a temperature-responsive element of the relief valve is exposed to the proportioned flow of raw air which moves from the duct junction to the carburetor, the relief valve being so adjusted that an increase in the temperature of the proportioned flow of raw air progressively increases the opening of a relief port in the vacuum line, thereby correspondingly reducing the negative pressure which is being supplied to the pneumatic actuator, with the result that the return spring will shift the air flow proportioning valve more towards said first end position;

a position-adjustable stop cooperating with the air flow proportioning valve so as to block the return-spring-induced valve movement in the direction towards the first

end position, at varying distances from said end position; and

temperature-responsive stop positioning means, including a temperature-responsive element which is exposed to raw air of ambient temperature.

4,161,931

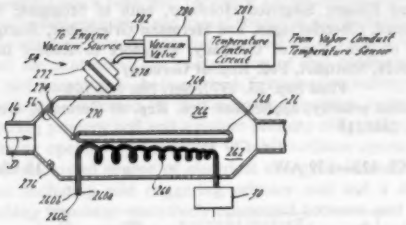
VAPOR TEMPERATURE CONTROLLED EXHAUST GAS HEAT EXCHANGER

Dante S. Giardini, Dearborn Heights, and Douglas R. Hamburg, Birmingham, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 699,004, Jun. 21, 1976, Pat. No. 4,099,499. This application Mar. 7, 1978, Ser. No. 884,331

Int. Cl.[2] F02M *31/00*

U.S. Cl. 123—122 E 3 Claims



1. An exhaust gas heat exchanger for inclusion in the exhaust gas conduit system of an automotive internal combustion engine, comprising in combination:

housing means having an exhaust gas inlet port and an exhaust gas outlet port;

baffle means received within said housing means operative to partition the interior of said housing means into at least two chambers, said chambers being arranged for parallel exhaust flow communication between said inlet port and said outlet port;

heat exchanger coil means received within one of said chambers and arranged for conveyance of a fluid;

diverter valve means within said housing in proximity to said inlet port and operable to direct exhaust gas passing through said inlet port to flow to said outlet port substantially through a selected one of said chambers;

valve control means for controlling the position of said diverter valve means;

said heat exchanger coil means being arranged for conveyance of a fluid fuel which is a liquid under standard temperature and pressure conditions and which may be vaporized by heating and said valve control means including temperature responsive means arranged to be responsive to the fluid fuel temperature at a selected fluid fuel location for controlling the application of exhaust gas heat to said coil means, said selected liquid fuel location is downstream, in the fluid conveyance direction, from the heat exchanger coil means; and

said valve control means further include vacuum motor means communicable to a vacuum source and communicating with said temperature responsive means operative to provide diverter valve means positioning.

4,161,932

FUEL INJECTION SYSTEM

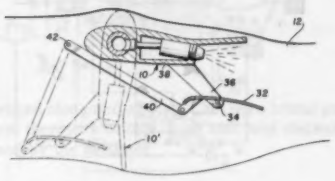
Siegfried Holzbaur, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 562,859, Mar. 27, 1975, Pat. No. 4,079,718. This application Mar. 17, 1978, Ser. No. 888,084

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1974, 2415182

Int. Cl.[2] F02M *39/00;* F16K *15/03*

U.S. Cl. 123—139 AW 12 Claims



1. In combination, the assembly including: air measuring valve means; biasing means; and an air suction tube of an internal combustion engine, the suction tube defining an air flow cross section and the air measuring valve means providing a controlled flow of air through the flow cross section, the improvement wherein:

the air measuring valve means is mounted eccentrically within the air suction tube for pivotal displacement by the air flow drawn into the suction tube by the engine against the force exerted on the air measuring valve means by the biasing means, said air measuring valve means including a main valve and an auxiliary valve with the outer surface of both valves being shaped to produce a lift force, said auxiliary valve being disposed adjacent to and preferably in the flow direction in front of the main valve; and

the main valve and the suction tube have their cooperating surfaces relatively dimensioned so that the flow cross section in the region of the air measuring valve is closed by the main valve under the force of the biasing means during periods when the air flow ceases, is gradually opened at one end of the main valve by an impedance induced force as a function of the pressure difference prevailing on both sides of the air measuring valve, and is further opened at the other end of the main valve as the air flow increases through the opening at said one end, and an air flow is established around the auxiliary valve.

4,161,933

MIXTURE CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINES

Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,844

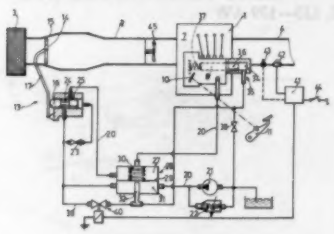
Claims priority, application Fed. Rep. of Germany, Sep. 3, 1976, 2639768

Int. Cl.[2] F02M *39/00*

U.S. Cl. 123—139 AW 21 Claims

1. An apparatus for regulating the fuel-air ratio of the combustible mixture for an internal combustion engine, said apparatus including: a main fuel metering system actuated by a control rod for providing metered amounts of fuel to the injection valves of the engine; an airflow metering device; a fuel flow valve having an adjustable flow crossection and serving to control the flow of fuel to said main fuel metering system; and a comparator for performing a comparison of the flow of fuel through said flow valve with the flow of fuel into said main fuel metering system, and wherein the improvement comprises: adjuster means; an arbitrarily settable control lever; a restoring spring for the control rod; and a relief line containing a throttle, wherein:

(i) said fuel flow valve is actuated by said airflow metering device;
(ii) said control rod is coupled to said arbitrarily settable control lever;
(iii) said comparator is a differential pressure valve connected in parallel with said fuel flow valve, said differential pressure valve having two chambers, one of which is a pressure controlled chamber, with the pressure controlled chamber being connected through the relief line containing the throttle to the adjuster means; and
(iv) said adjuster means includes a final control element coupled to the control rod, whereby the control rod may be displaced in opposition to said restoring spring, said adjuster means being actuated by said differential pressure valve for causing a corrective displacement of the control rod in response to the results of the comparison performed by said differential pressure valve.



4,161,934

APPARATUS TO CONTROL THE COMPOSITION OF THE OPERATING MIXTURE OF AN INTERNAL COMBUSTION ENGINE

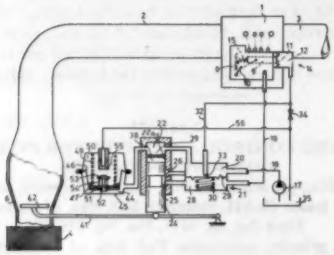
Gerhard Stumpp, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 12, 1977, Ser. No. 832,704

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1976, 2641398

Int. Cl.[2] F02M *39/00*

U.S. Cl. 123—139 AW **13 Claims**



1. In a control apparatus for controlling the composition of the operating mixture of an internal combustion engine, and including: air metering means for metering the air quantity aspirated into the engine; fuel supply means; a fuel apportioning device including throttle means connected to and actuatable by the air metering means; a fuel supply line leading from the fuel supply means to the fuel apportioning device, said fuel supply means supplying fuel through the fuel supply line to the fuel apportioning device at an essentially constant pressure; a differential pressure control valve connected to the fuel supply line between the fuel supply means and the fuel apportioning device, said differential pressure control valve having a controlled pressure chamber situated upstream of said throttle means and an uncontrolled pressure chamber situated downstream of said throttle means; a fuel injection pump; positioning means for adjustment of the air fuel ratio of the operating mixture said positioning means having a working chamber; and a relief line containing throttle means, said relief line being connected to the controlled pressure chamber and to the working chamber upstream of its throttle means, the improvement comprising:
(a) means defining a storage chamber having a displaceable wall, said fuel supply line being connected upstream of the throttle means of the fuel apportioning means to the storage chamber;
(b) force applying means being connected to said displaceable wall, said displaceable wall being displaceable in opposition to an essentially constant force produced by the force applying means to a terminal position; and
(c) a pressure control valve connected to the fuel supply line upstream of the throttle means of the fuel apportioning means.

4,161,935

FUEL INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

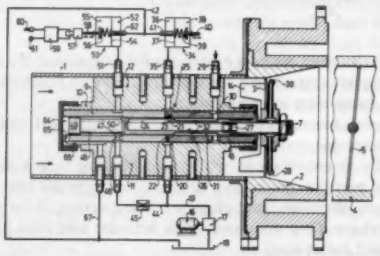
Konrad Eckert; Siegfried Holzbaur, both of Stuttgart; Wolf Wessel, Oberriexingen, and Hermann Grieshaber, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 23, 1977, Ser. No. 836,104

Claims priority, application Fed. Rep. of Germany, Oct. 7, 1976, 2645215

Int. Cl.[2] F02M *9/08*

U.S. Cl. 123—139 AW **19 Claims**



1. In a fuel injection system for an internal combustion engine, said system including an air flow rate measuring member located in the induction tube of said engine, and seriatim thereto an arbitrarily settable throttle valve, said air flow rate measuring member being disposed for axial displacement with respect to said induction tube under the influence of said air flow, and there being provided means to exert a restoring force on said member in opposition to said air flow, and wherein said system further includes fuel metering means including a movable valve member, said movable valve member being moved by said displacements of said air flow rate measuring member, the improvement comprising:
said air flow rate measuring member is a baffle plate disposed on a shaft, and said fuel metering means is provided by features of said shaft and further comprising a rotating member disposed to rotate about the axis of said shaft, and means responsive to the air flow for rotating the shaft about its axis, and yet further comprising conduit means for delivering metered fuel from said fuel metering means to the vicinity of the periphery of said baffle plate where the air flow velocity is near maximum.

4,161,936

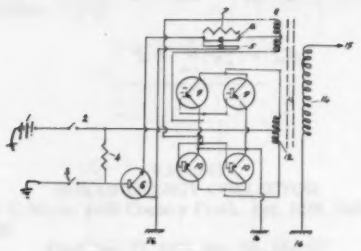
AUDIO FREQUENCY IONIZATION IGNITION SYSTEM

Bill V. Volsky, 430-11th Ave., SE., Calgary, Alberta, Canada

Continuation-in-part of Ser. No. 424,235, Jan. 24, 1974, abandoned. This application Apr. 19, 1977, Ser. No. 788,829

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—148 E **3 Claims**



1. An ignition device for ignition systems of automobiles and the like which includes a source of low voltage D.C. electrical energy and a mechanically operated contact breaker assembly; comprising in combination a solid state high voltage generator, a sinusoidal wave push/pull oscillator circuit operatively connected to said generator and to said source of electrical energy, and a switching circuit operatively connected to said oscillator circuit for controlling the energization of said oscillator circuit, said generator including a high frequency secondary coil operatively connected to the associated ignition system, a triggering primary coil and a power primary coil, said power coil being operatively connected to said oscillator circuit and to the associated source of electrical energy, said switching circuit including said triggering primary coil and a single switching transistor operatively connected between said triggering primary coil, said source of electrical energy and said associated contact breaker assembly whereby the opening and closing of said contact breaker assembly activates said switching circuit and hence synchronizes the output of said power generator with the ignition system, said switching circuit including means to absorb surge energy in said oscillator circuit, said means including a resistor and capacitor in parallel with one another, one side of said resistor and capacitor being connected centrally to said triggering coil, the other side of said resistor and capacitor being connected to the emitter of said switching transistor, and a further capacitor being connected between said other side of said first mentioned resistor and capacitor and the collector of said switching transistor.

4,161,937

IGNITER WITH MAGNETIC ACTIVATION

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

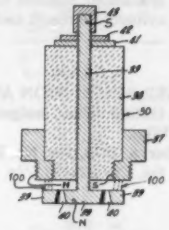
Continuation-in-part of Ser. No. 707,208, Jul. 21, 1976, abandoned. This application Jan. 3, 1977, Ser. No. 756,547

Int. Cl.[2] F02P *1/00*

U.S. Cl. 123—169 EL **5 Claims**

1. An igniter having an electrical insulator, comprising the combination of:

a magnetized base retaining said insulator, one end of said base being the firing end of said igniter; and



a magnetized elongated electrode having a lateral protrusion integral therewith at said firing end, said electrode being retained by the insulator.

4,161,938

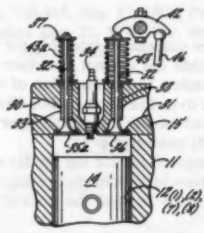
INTERNAL COMBUSTION ENGINE WITH IMPROVED INTAKE VALVE CONTROL SYSTEM

Charles L. King, 703 Rozanne Dr., Addison, Ill. 60101

Filed May 18, 1978, Ser. No. 907,002

Int. Cl.[2] F02D *13/06*

U.S. Cl. 123—198 F **6 Claims**



1. An internal combustion engine for automobiles and the like comprising:

a cylinder block formed with a plurality of cylinders,

a piston mounted within each cylinder for reciprocating movement in a four stroke operating cycle comprising an intake stroke, a compression stroke, a power stroke and an exhaust stroke,

a crankshaft rotatably driven by reciprocating movement of said pistons,

an intake port communicating with each said cylinder,

means for directing fuel into each said cylinder,

an intake valve for each intake port mounted for movement between an open position permitting gas flow into the respective cylinder and a closed position blocking gas flow into the cylinder,

an exhaust port leading from each said cylinder,

an exhaust valve for each exhaust port mounted for reciprocating movement between a position closing the outlet port from the respective cylinder and a position opening the outlet port,

cam means for opening and closing the intake valves for some of said cylinders during each cycle of operation in predetermined timed relation to said crankshaft rotation,

spring means for controlling the opening and closing of the intake valves of the other cylinders, said spring means including a biasing spring for urging the intake valve of each said other cylinder to a normally closed position while permitting progressively greater opening of the respective intake valve on intake strokes during relatively high speed operation than during lower speed operation of the engine,

electrical means for igniting the fuel introduced into said cylinders in timed firing sequence, and

means for opening and closing said exhaust valves in timed relation to said crankshaft rotation to permit exhaust of gases from said cylinders through said exhaust ports.

4,161,939

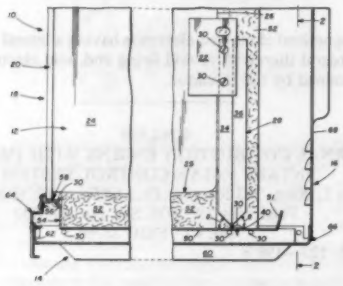
OVEN LINER SUSPENSION ASSEMBLY

Richard M. Scherer, Oxford, Miss., assignor to Chambers Corporation, Oxford, Miss.

Filed Mar. 6, 1978, Ser. No. 883,748

Int. Cl.[2] F24C *15/16*

U.S. Cl. 126—19 R **13 Claims**



1. An oven liner suspension assembly for rigidly supporting an oven liner within the cabinet structure of an oven while allowing for expansion and contraction of the oven liner during operation, the oven liner being a box-like structure with an open front wall and having a top wall, rear wall, bottom wall and two side walls comprising:

at least one elongated anchor leg rigidly secured to the rear wall of the oven liner, said anchor leg extending a predetermined distance beyond the bottom wall of the oven liner;

a base plate member extending beneath the bottom wall of said oven liner and extending to an upwardly projecting edge;

said anchor leg extending to a flange member, said flange member being rigidly attached to said base plate member such that said anchor a leg may bend with respect to said base plate member during expansion and contraction of the oven liner; and

a lip extending peripherally from the front of the oven liner, said lip being rigidly attached to said upwardly projecting edge such that the front of the oven liner is rigidly suspended upon said base plate member such that the oven liner may expand and contract during operation of the oven.

4,161,940

TELESCOPIC HEAT CONTROL DEFLECTOR

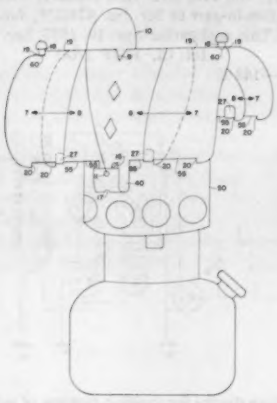
Frances E. Reed, 11 N. Shore Trail, Sparta, N.J. 07871

Filed Mar. 3, 1977, Ser. No. 753,355

Int. Cl.[2] F24C *1/16*

U.S. Cl. 126—59 **10 Claims**

1. A heater heat-deflector comprising incombination: a sheet element having heater unit-mounting means located at each of two of first opposite side-edges thereof, the heater unit-mounting means being adapted for mounting one of the first opposite side edges onto one side portion of a heater unit, and for mounting a remaining one of the first opposite side edges on an opposite side of the heater unit, such that the sheet element extends above and a predetermined distance above the heater unit sufficiently to deflect rising heat; said sheet element having ventilation through-space extending upwardly through the sheet element at at-least one point located substantially in alignment between said one and said remaining one of said first opposite side edges at a point adapted to be over the heater unit and at-least one telescopable deflector flange-sheet mounted



on and extendable from and retractable to at-least one of said other second opposite edges, and being telescopable in to and fro directions.

4,161,941

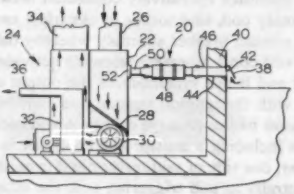
AIR INLET APPARATUS

Samuel D. Bloxham, Scarborough, Canada, assignor to Donald B. Moffatt, Hamilton, Canada

Filed Oct. 27, 1977, Ser. No. 845,981

Int. Cl.[2] F24C *3/00*

U.S. Cl. 126—85 B **8 Claims**



8. In an oil or gas fired furnace system used in a building such as at home, and including a furnace, hot air ducts leading hot air from the furnace to parts of the building, a cold air return from said parts of the building back to the furnace and a furnace burner and flue system, the improvement in which a device is provided to permit the furnace to inspire colder air from outside the building into the cold air return for heating by the furnace, said device comprising:

a cylindrical inlet portion operatively coupled to the outside of the building for receiving said colder air from outside the building and having an upstream end towards the outside of the building and a downstream end;

means defining a chamber attached to the downstream end of the inlet portion and having an internal cross-section larger than that of the inlet portion;

a frustro-conical section coupled to the chamber remote from the inlet portion for carrying air from the chamber towards the furnace and converging towards the furnace;

a valve assembly comprising means defining a valve seat at the junction of the inlet portion on the chamber means, a conical element contained in the chamber and defining a conical surface engageable with the valve seat to restrict air flow, and carrier means coupled to the chamber and to the conical element to locate the element relative to the

valve seat and to permit adjustment of the element towards and away from the valve seat to thereby adjust air flow;

a baffle plate fixedly positioned at the junction of the chamber and the frustro-conical section to inhibit sudden flow changes caused by pressure fluctuations; and

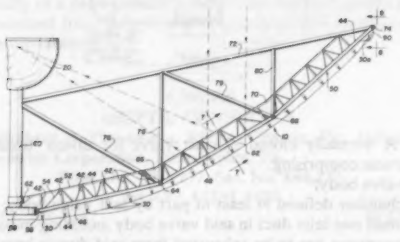
means coupling the frustro-conical section to the furance cold air return to complete the colder air path to the furnace.

4,161,942

SOLAR ENERGY COLLECTOR

Robert J. Monk, 4640 Country Creek, Apt. 1255, Dallas, Tex. 75236

Filed Dec. 27, 1977, Ser. No. 864,617
Int. Cl.[2] F24J *3/02*
U.S. Cl. 126—271 **11 Claims**



1. A solar energy collection device for heating a heat transfer media comprising: a plurality of concentrically arranged rings, said rings forming a circular paraboloid shaped frame; support means rotatably supporting said circular paraboloid frame; means adjustably supporting said rings to said support means; a plurality of strips of reflective film, said strips being positioned across said rings from the outer ring of said circular paraboloid frame to the opposite side of said ring through the center of the frame, said reflective film further arranged to form a mirror surface to reflect sun's incoming light rays to a focal point; means to adjust the tension of said reflective film strips; and a solar collector secured at the focal point of said mirror and adapted to transfer heat to a media flowing therethrough.

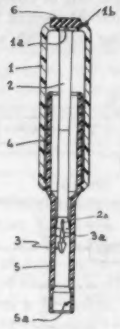
4,161,943

NEEDLE IMPLANTING APPARATUS

Paul Nogier, 108 rue du Dr. Edouard Locard, Lyon, France (69005)

Filed May 10, 1977, Ser. No. 795,470
Claims priority, application France, May 19, 1976, 76 15861
Int. Cl.[2] A61B *17/52*
U.S. Cl. 128—1.3 **6 Claims**

1. In an apparatus to introduce intra-dermal needles in the tissues, said apparatus including a body, supporting means carried by said body to support a needle made of a magnetizable material, and means to push said needle beyond said body to implant same into the tissues, the improvement in said apparatus comprising a permanent magnet fixed to said apparatus on an exposed surface thereof by means of which the implanted



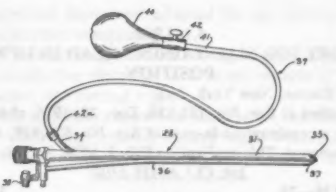
needle may be magnetized and remagnetized as often as required.

4,161,944

LASER SYSTEM AND METHOD AND LASER AMPLIFIER FOR USE THEREWITH

Myron C. Muckerheide, 5510 Pine Park St., Schofield, Wis. 54476

Division of Ser. No. 724,119, Sep. 17, 1976, Pat. No. 4,120,293.
This application Aug. 22, 1978, Ser. No. 935,792
Int. Cl.[2] A61B *5/08*
U.S. Cl. 128—654 **6 Claims**



3. A system selectively conducting a laser beam to vaporize absorbing material located at an internal area of a living mammal, comprising means selectively supplying a laser beam having a predetermined wavelength, a laser amplifier adjacent to said supply means and having an input receiving said supply laser beam and an output supplying an amplified laser beam, means including an inlet mounted adjacent to said amplifier output and extending into said internal area of said living mammal for providing an outlet located adjacent said absorbing material for permitting passage of said amplified laser beam to said absorbing material, means injecting particles capable of emitting X-rays when energized by a photon onto said absorbing material, and means sensing the vaporization of said absorbing material and said particles in response to said amplified beam for diagnosis of a condition of said internal area.

4,161,945

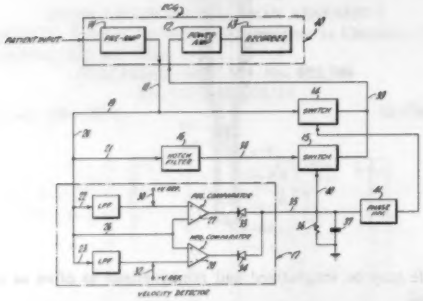
SELECTIVE INTERFERENCE FILTER

Hyman Grossman, Elmwood Park, N.J., assignor to Cambridge Instrument Company, Inc., Ossining, N.Y.

Filed Oct. 25, 1977, Ser. No. 844,896
Int. Cl.[2] A61B *5/04*
U.S. Cl. 128—696 **6 Claims**

1. Filtering apparatus for electrical signals produced by biophysical recording apparatus such as an ECG comprising a notch filter having an input and output, means for feeding said signals to the input of said notch filter, a velocity detector

having an input connected to said notch filter and including means for producing control signals in response to the presence and absence of a rapid rate of change of first said electrical signal, switch means interconnected between the input and output of said notch filter and with said velocity detector



whereby one of said control signals will actuate said switch means to selectively feed said electrical signals through said notch filter and the other of said control signals will actuate the switch means to bypass said filter, and means for delaying reinsertion of said notch filter after it has been bypassed.

4,161,946

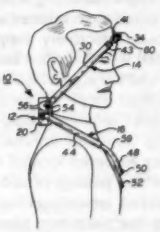
SUPPORT FOR MAINTAINING HEAD IN UPRIGHT POSITION

Lance E. Zuesse, New York, N.Y.

Continuation of Ser. No. 752,138, Dec. 20, 1976, abandoned, which is a continuation-in-part of Ser. No. 675,929, Apr. 12, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,580

Int. Cl.[2] A61H *1/02*

U.S. Cl. 128—75 **18 Claims**



1. A head support, comprising:

nape-engagement means for positioning in such manner as to engage the nape of the neck of the wearer;

forehead-engagement means for positioning around the wearer's forehead; and

chest-engagement means for placement on the wearer's chest,

said nape-engagement means, said forehead-engagement means and said chest-engagement means being so interconnected that said nape-engagement means acts as a force-transmitting fulcrum through which the forward and downward pressure of the wearer's head applied to said forehead-engagement means is passed on to said chest-engagement means.

4,161,947

DIVERS EXHAUST VALVE

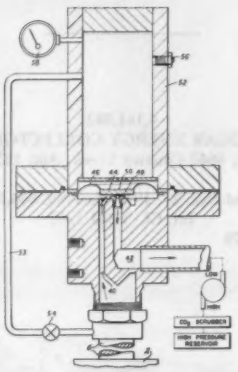
Alexander G. Copson, 52 High St., Yaddlethrope, Scunthorpe, Lincolnshire, England

Filed Feb. 14, 1977, Ser. No. 768,459

Claims priority, application United Kingdom, Feb. 16, 1976, 6042/76; Feb. 26, 1976, 7671/76; May 13, 1976, 19787/76

Int. Cl.[2] B63C *11/18*

U.S. Cl. 128—142.3 **5 Claims**



1. A normally closed exhaust valve for divers' breathing apparatus comprising:

a valve body;

a chamber defined at least in part by said valve body;

at least one inlet duct in said valve body including means for receiving gas to be exhausted from said diver's breathing apparatus, each said inlet duct being in communication at one end thereof with said chamber;

at least one exhaust duct in said valve body for selectively receiving gas from said inlet ducts and for exhausting the gas, each said exhaust duct terminating at one end thereof in an orifice opening into said chamber;

at least one diaphragm forming a wall portion of said chamber and each carrying a valve member thereon positioned adjacent each said exhaust duct orifice, each said valve member being normally urged into seating position relative to each said exhaust duct orifice to thereby prevent communication between the inlet and exhaust ducts, said diaphragm being exposed on the side thereof remote from its associated chamber solely to ambient external pressure and on the other side thereof solely to the combined pressure in said chamber and said exhaust duct;

pressure control means connected to said exhaust duct for maintaining a predetermined pressure therein;

a compressor having a low pressure inlet and a high pressure outlet;

a high pressure gas reservoir;

conduit means connected between said exhaust duct and an inlet of said pressure control means, between an outlet of said pressure control means and the inlet of said compressor and between the outlet of said compressor and said reservoir;

and a carbon dioxide scrubber unit connected between said pressure control means and said reservoir;

whereby each said valve member is movable in accordance with changes in the pressure acting on the opposed sides of said diaphragm between a first normally closed position in which its seats on the orifice at said one end of said exhaust duct to prevent communication between the inlet and exhaust ducts and a second open position in which the valve member is unseated from the said orifice and is spaced from same to permit communication between said

inlet and exhaust ducts for exhaustion of gas from the valve.

4,161,948

SYNTHETIC MEMBRANE FOR WOUND-DRESSINGS

Daniel Bichon, Gaillard, France, assignor to Battelle Memorial Institute, Carouge, Switzerland

Filed Jan. 16, 1978, Ser. No. 869,688

Claims priority, application Switzerland, Jan. 18, 1977, 576/77

Int. Cl.[2] A61F *13/00*

U.S. Cl. 128—156 **20 Claims**

1. Synthetic membrane or skin containing poly-aminoacids usable for wound-dressings consisting of two integral layers of which at least one is resorbable by the body, the first internal layer being directly applied to the wound and the second layer constituting an external protection thereof, characterized by the fact that the second layer is formed from a porous semi-permeable membrane or film having an asymmetric structure, that is having pores of decreasing size when going from the inside layer to the outside one, which ensures the free penetration of air, water and low molecular weight substances but prevents the entrance of external pathogenic germs, and by the fact that the first layer is essentially formed of a hydrophilic, non-toxic, bio-degradable membrane or tissue consisting substantially of a pluri-cellular, spongy and fluid permeable material selected from polymers and copolymers of α-aminoacids and esters thereof.

4,161,949

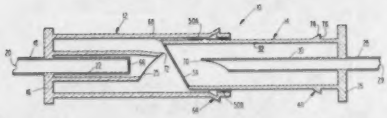
ASEPTIC CONNECTOR

Chandrakant B. Thanawalla, King of Prussia, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Oct. 27, 1977, Ser. No. 846,227

Int. Cl.[2] A61M *3/00*

U.S. Cl. 128—247 **10 Claims**



1. An aseptic connector for affecting aseptic juncture of two bodies, for fluid flow therebetween, through said connector, comprising:

(a) a female element including:

(i) a base;

(ii) a first conduit passing through said base, a first end thereof communicating with said first body, a second end thereof extending distally from said base;

(iii) a cylindrical sheath extending from said base a greater distance than said second end of said first conduit, concentrically spaced about said distally extending second end of said first conduit;

(iv) an annular exterior wall extending from said base a greater distance than said sheath, concentrically spaced about said sheath, a distal end of said exterior wall defining a first orifice; and

(v) first pellicular means for sealing said first orifice at said annular exterior wall distal end;

(b) a male element, telescopingly engageable with said female element, including:

(i) a sole;

(ii) a second conduit passing though said sole, a first end thereof communicating with said second body, a second end thereof extending distally from said sole, said second conduit telescopingly insertable into said first conduit;

(iii) tubular means extending from said sole a greater distance than said second conduit, concentrically spaced about said second conduit, having an outer diameter less than inner diameter of said annular wall, said tubular means telescopingly insertable into said annular exterior wall; and

(c) means for retaining said male and female elements in telescoping engagement, with said tubular means at least partially resident within said annular exterior wall and said second conduit at least partially resident within said first conduit.

4,161,950

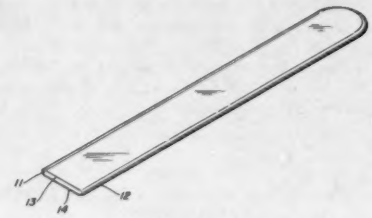
ELECTROSURGICAL KNIFE

James D. Doss; Robert E. Cowan; Robert H. Newell, and Charles W. McCabe, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 1, 1975, Ser. No. 601,113

Int. Cl.[2] A61N *3/04*

U.S. Cl. 128—303.14 **7 Claims**



5. A surgical implement adapted for use with a radiofrequency generator comprising:

a blade of insulating material having a sharp cutting edge;

a first conductive electrode secured on one side of said blade adjacent said cutting edge;

a second conductive electrode secured on the other side of said blade adjacent said cutting edge, whereby said first and second electrodes are insulated from one another.

4,161,951

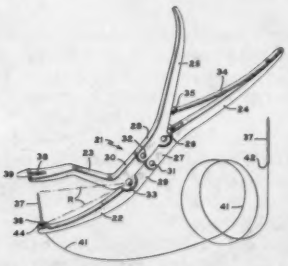
NEEDLE DRIVER

Dennis R. Scanlan, Jr., Boca Raton, Fla., assignor to Scanlan International, Inc., St. Paul, Minn.

Filed Apr. 27, 1978, Ser. No. 900,719

Int. Cl.[2] A61B *17/06*

U.S. Cl. 128—340 **7 Claims**



1. In a needle driver, to assist the surgeon in inserting sutures in tough tissue such as the sternum, for manipulation of sutures, particularly of the type having a straight needle at each end of the suture and in which the suture is fixed coaxially in the base of each needle and in which a disparity in diameters of the

needle and the suture establishes an annular foot at the base of the needle, the combination of the following elements:

a lower jaw, being an elongate member;

an upper jaw, being a similar elongate member, the two jaws being articulated at one end by means affording reciprocation of the free ends of the jaws;

a cylindrical socket proximate to the free end of the lower jaw in its upper face, to receive the base of the needle and direct the needle point toward the free space within a fork at the end of the upper jaw;

a cylindrical channel, coaxial with the socket but of lesser diameter, extending from the bottom of the socket to the lower face of the lower jaw, to accommodate the suture fixed coaxilly in the base of the needle;

an annular step at the bottom of the socket, arising from the difference in diameters of the socket and the channel, the annular step accommodating the annular foot at the base of the needle, serving as a platform, to impart thrust thereupon when the jaws are closed to drive the needle through tissue placed thereinbetween; and

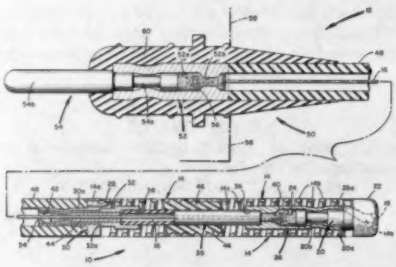
a kerf in the lower jaw, of width sufficient to accommodate the diameter of the suture but not that of the needle, the kerf extending to the common axis of the socket and channel, to permit loading of the needle into the socket by first sliding the suture sidewise into the kerf and then seating the needle into the socket by drawing the suture down through the channel.

4,161,952

WOUND WIRE CATHETER CARDIOVERTING ELECTRODE

Philip C. Kinney, Pittsburgh; Marlin S. Heilman, Gibsonia, and Alois A. Langer, Pittsburgh, all of Pa., assignors to Mieczyslaw Mirowski, Owings Mills, Md.

Filed Nov. 1, 1977, Ser. No. 847,443
Int. Cl.[2] A61N *1/04*
U.S. Cl. 128—786 **36 Claims**



1. A large surface area catheter electrode having a smooth outer surface and being of a uniform diameter throughout its discharge surface, for permanent implantation in a body and for cardioverting a malfunctioning heart, the electrode comprising:

an electrically conductive resilient wire discharge electrode having an elongated coil wound section and proximal and distal ends said coil wound section being of a solid, single conductive material;

an electrically conductive lead extending to said wound section of said resilient wire electrode and having proximal and distal ends, said proximal end being adapted for connection to a pulse generator;

connector means for electrically connecting said lead to said resilient wire discharge electrode; and

a filler material substantially filling said wound section of said resilient wire electrode so that only the outer periphery of said wound section is exposed to the body.

4,161,953

METHOD OF PUFFING TOBACCO TISSUE

Eugene Glock, Richmond, Va., assignor to American Brands, Inc., New York, N.Y.

Continuation of Ser. No. 744,042, Nov. 22, 1976, abandoned, which is a continuation of Ser. No. 628,912, Nov. 5, 1975, abandoned, which is a continuation of Ser. No. 40,726, May 27, 1970, abandoned. This application Jun. 6, 1978, Ser. No. 913,246
Int. Cl.[2] A24B *3/18*
U.S. Cl. 131—140 P **3 Claims**

1. A method for puffing tobacco tissue which consists essentially of:

(A) admixing tobacco tissue with hot water at a temperature of at least about 70° C. to the boiling point thereof, said hot water being added in an amount such that substantially all the hot water is absorbed by the tobacco tissue within a maximum period of five (5) minutes, said tobacco tissue being puffed by the absorbed hot water;

(B) evaporatively freeze-drying the puffed tobacco tissue of step (A) under subatmospheric pressure; and

(C) recovering tobacco tissue having a retained puffed condition free of an objectionable amount of tackiness caused by hydroscopic extractives on the surface of the tobacco tissue.

4,161,954

SMOKING APPARATUS

Bert F. Fornaciari, 179 Primrose, Palo Alto, Calif. 94303

Filed May 12, 1977, Ser. No. 796,177
Int. Cl.[2] A24F *1/14, 1/26*
U.S. Cl. 131—173 **13 Claims**

1. In a smoking apparatus having a water container for containing water, a pipe bowl for holding burning smoking material, means for connecting said pipe bowl to the water container and means for drawing smoke from the pipe bowl through water in the water container before it is discharged from the apparatus, the improvement comprising:

valve means located in the pipe bowl having a closed position for preventing smoking material in the pipe bowl from falling into the water container and an open position for dumping the residue and ash from smoking material burned in the pipe bowl into the water container, said valve means including an air passageway for permitting smoke to pass therethrough when said valve means is in its closed position.

4,161,955

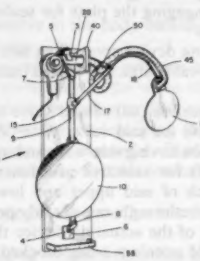
COMBINATION MIRROR/HAIR DRYER

Robert Webb, 145 N. 410 W., St. George, Utah 84770

Filed Jun. 10, 1977, Ser. No. 805,531
Int. Cl.[2] A45D *20/00*
U.S. Cl. 132—9 **10 Claims**

1. Hair drying-mirror apparatus for use in combination with a pistol-grip portable hair dryer comprising a base, a mirror

mounted on the base, adjustment means for varying the vertical position of the mirror on the base, mounting means for



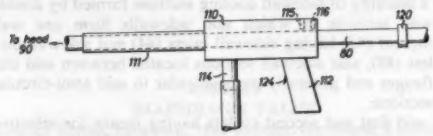
removably holding a pistol-grip portable hair dryer on the base, and adjustable direction means for adjustably directing the flow of air from the dryer to a desired location.

4,161,956

CLEANING ARRANGEMENTS FOR TUBES

Jared Hadgkiss, 125 Fallowfield, Chesterton, Cambridge, England

Filed Sep. 16, 1977, Ser. No. 833,952
Int. Cl.[2] B08B *3/02, 9/04*
U.S. Cl. 134—167 C **8 Claims**



1. Cleaning apparatus for cleaning the interior of a tube or tubes, said apparatus comprising a hose having at one end thereof a jet producing head, a reel on which said hose is wound, drive means for rotating the reel to either unwind hose therefrom or wind hose onto the reel, a hand holdable housing having a barrel in which said head can be accommodated and from which the head can be ejected along a tube to be cleaned, the hose, when said head has been ejected, passing through said barrel, first and second switch means carried by said housing, actuation of said first switch means causing said drive means to rotate the reel in one direction and actuation of said second switch means causing said reel to rotate in the opposite direction, and means for supply water under pressure to said hose.

4,161,957

LEAKAGE PROTECTIVE APPARATUS FOR STORAGE CONTAINERS OR THE LIKE

Ernst H. Schoellkopf, Zumikon, Switzerland, assignor to Ironflex AG, Aurich, Switzerland

Filed Sep. 28, 1976, Ser. No. 727,614
Claims priority, application Switzerland, Oct. 6, 1975, 12946/75; Dec. 24, 1975, 16799/75; Fed. Rep. of Germany, Mar. 15, 1976, 2610769
Int. Cl.[2] G01M *3/28*
U.S. Cl. 137—205 **13 Claims**

1. A leakage protective apparatus for the outlet line of a storage container for flowable material, comprising

a storage container,

a consumer,

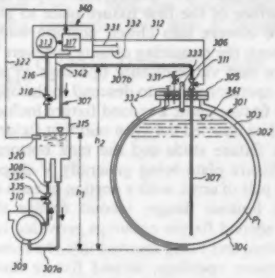
a conduit arrangement connecting the storage container and consumer,

the conduit arrangement including a pump for pumping the flowable material from the storage container to the consumer,

the conduit arrangement further including an intermediate container connected between the pump and storage container,

a negative pressure source connected to the intermediate container,

the conduit arrangement further including a shutoff valve,



means for detecting a predetermined minimum negative pressure in the conduit arrangement,

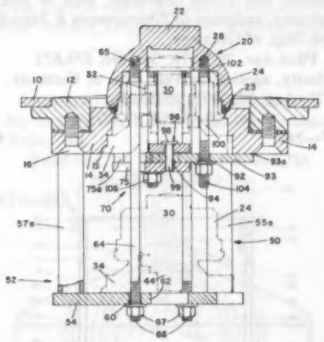
and a switching device for closing the valve when the detecting means detects a pressure above the predetermined minimum negative pressure.

4,161,958

FIXTURE ASSEMBLY FOR REMOVING OPERATING ASSEMBLY FROM BOTTOM OPERABLE TANK CAR VALVE WHILE CLOSURE PORTION REMAINS IN CLOSED POSITION IN THE TANK

Gunter R. Behle, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.

Filed Aug. 1, 1977, Ser. No. 820,552
Int. Cl.[2] F16K *43/00, 51/00*
U.S. Cl. 137—316 **13 Claims**



1. A fixture assembly for removing for repair and/or replacement some or all of an operating assembly of a bottom operable tank car valve while a valve closure portion of a valve assembly remains in closed position in engagement with a valve seat, preventing any lading from escaping from the tank while the damaged portion of the valve operating assembly including depending operator means is repaired and/or replaced, comprising:

a first fixture having a first fixture plate and at least a pair of first fixture spacers which extend from said first fixture plate to a tank car bottom flange, said spacers maintaining the first fixture plate spaced from the tank bottom flange; said first fixture plate including first fixture openings which align with valve closure openings in a valve closure; closure fasteners holding the depending operator means attached to the valve closure; at least some of said

closure fasteners which align with said first fixture openings being removable and adapted to be replaced with first fixture studs extending through said first fixture openings openings in said depending operator means and into said valve closure openings from which said closure fasteners have been removed; first fixture stud fastening means attached to said first fixture studs secured against the lower surface of the first fixture plate to positively urge the valve closure into closed position into engagement with its seat; the remaining closure fasteners being removable from said valve closure openings to allow said depending operator means to descend to the upper surface of said first fixture plate; a second fixture including a second fixture plate inserted between said first fixture spacers and said first fixture studs and the tank bottom flange; said second fixture plate being generally V-shaped, including at least a pair of arms, with a portion of each arm engaging the tank bottom flange; second fixture studs inserted through second fixture openings provided in said second fixture arms, and being inserted into the remaining of said valve closure openings; second fixture fastening means attached to the lower ends of the second fixture studs to urge said second fixture into firm engagement with the tank bottom flange, and said valve closure into engagement with its seat; whereby said first stud fastening means may then be disconnected and the first fixture studs removed from said valve closure openings; and whereby said first fixture and said depending operator means may be removed from the tank bottom for repair or replacement of damaged valve operator parts, while said second fixture maintains the valve closure in closed position engagement with its seat, retaining the lading in the tank during repair or replacement of the valve operator parts which have been removed.

4,161,959

HIGH-TEMPERATURE SLIDE VALVE, ESPECIALLY HOT-BLAST SLIDE VALVE

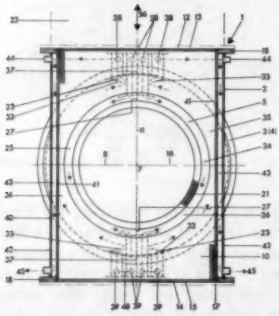
Hermann Jansen, and Heinz Schneider, both of Düren, Fed. Rep. of Germany, assignors to Zimmermann & Jansen GmbH, Duren, Fed. Rep. of Germany

Filed Apr. 20, 1976, Ser. No. 678,672

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1975, 2518074; Aug. 28, 1975, 2538357

Int. Cl.[2] F16K *49/00*

U.S. Cl. 137—340 **4 Claims**



1. A high-temperature slide valve, especially hot-blast slide valve, comprising:

(a) a water cooled valve casing having a flow cross-section with a longitudinal axis provided with a pair of end flanges, said casing including coolant passages;

(b) circular, hollow, tubular sealing strips positioned in the casing;

(c) said valve casing defining a chamber positioned transversely of the longitudinal axis of the flow cross-section of the valve casing, said chamber having therein a slide valve plate for closing and opening said flow cross-section, said sealing strips having arcuate outer surfaces slideably and sealingly engaging the plate for sealing said casing to the plate;

(d) an actuating device controlling said valve plate position being removably attached to said casing at one end of said chamber;

(e) a center portion (**60**) of said valve casing enclosing said chamber (**10**) for said valve plate (**9**) with a rectangular configuration having side walls and upper and lower walls (**17** and **18**) for selective attachment of said actuating device, each of said upper and lower walls having an opening therethrough, one of said openings being open for positioning of the actuating device therethrough and the other of said openings being blocked by a closure means;

(f) refractory material lining the sidewalls (**40**) of said chamber (**10**);

(g) said coolant passages comprising first and second opposing, concentric, semi-circular sections (**25** and **26**) having first and second inlets (**28**) and first and second outlets (**29**), respectively, said first and second sections located around the flow cross-sections and formed within the hollow of said sealing strips (**5**);

(h) third and fourth opposing, concentric, semi-circular sections (**35** and **36**) having third and fourth inlets (**39**) and third and fourth outlets (**38**), respectively, said third and fourth sections being defined by said casing and disposed radially outward of and concentric with said first and second sections;

(i) a plurality of sidewall cooling sections formed by double wall sections of which said sidewalls form one wall thereof (**43**) having sidewall inlets (**44**) and sidewall outlets (**45**), said sidewall sections located between said end flanges and generally perpendicular to said semi-circular sections;

(j) said first and second outlets having means for selective normal connection to said third and fourth inlets; and

(k) said third and fourth outlets having means for selective normal connection to said sidewall inlets.

4,161,960

HIGH AND LOW TUBING PRESSURE ACTUATED WELL SAFETY VALVE

Fred E. Watkins, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Feb. 23, 1978, Ser. No. 880,532

Int. Cl.[2] F16K *17/00*

U.S. Cl. 137—458 **4 Claims**

1. A well safety valve adapted to be positioned in a well

tubing and close on either a predetermined high tubing pressure or a predetermined low tubing pressure comprising,

a body,

a valve closure member in the body moving between open and closed positions,

a tubular member longitudinally movable in the body for controlling the movement of the valve closure member, said tubular member including a first upper, a second middle, and a third lower telescoping section, said first section including a piston exposed to fluid pressure in the tubing acting to move the first section in response to the fluid pressure,

means yieldably urging the first section in a direction to open the valve,

means yieldably urging the second section in a direction to open the valve,

first releasable locking means normally securing the first and second sections together,

second releasable locking means normally securing the second and third sections together,

means for moving the third section in a direction for allowing the closure of the valve member when the second locking means is released.

4,161,961

DIAPHRAGM VALVE

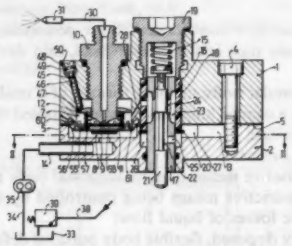
Heinrich Knapp, Leonberg; Max Greiner, Gerlingen; Klaus-Jürgen Peters, Affalterbach, and Günther Jäggle, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 9, 1977, Ser. No. 831,831

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1976, 2648955

Int. Cl.² G05D *7/01*

U.S. Cl. 137—501 **5 Claims**



1. In a diaphragm valve including: means defining a chamber; a flexible diaphragm forming a movable part of the valve, said diaphragm being clamped by the chamber defining means so as to extend across the chamber and divide same into two chambers through which pressurized liquid flows; and a valve carrier including a seat positioned in one of the chambers in operative proximity to the diaphragm, the improvement comprising:

a valve plate disposed loosely in a pocket in the diaphragm and serving to operatively cooperate with the valve seat; and

spring means encircling said valve carrier arranged to center said valve plate relative to said valve seat.

4,161,962

CIRCUIT FOR DETERMINING THE RESPONSE CURRENT OF MAGNETIC VALVES

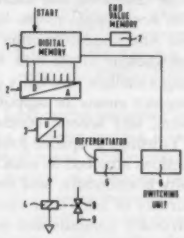
Albert Maringer, and Michael Labinsky, both of Karlsruhe, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 23, 1977, Ser. No. 827,025

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1976, 2640900

Int. Cl.² F16K *31/06*; G01R *33/00*

U.S. Cl. 137—557 **10 Claims**



1. A circuit for determining the response current of magnetic valves comprising:

a. a current source for delivering an impressed current rising as a ramp to a field coil of the magnetic valve;

b. a differentiator coupled parallel to the field coil for the differentiating the voltage at the field coil;

c. an electronic switching unit having as a control input the output of said differentiator;

d. a program generator in control connection with the current source in such a manner that a sudden rise in the output voltage of the differentiator stops the program generator; and

e. means for storing the program value, which is reached when the current rise is stopped and which determines the response current, coupled to the program generator.

4,161,963

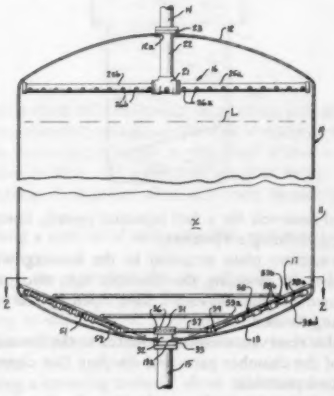
LIQUID TREATMENT APPARATUS

Walter J. Stevens, Belvidere, Ill., assignor to Techni-Chem, Inc., Cherry Valley, Ill.

Filed Sep. 22, 1975, Ser. No. 615,718

Int. Cl.² E03B *11/00*

U.S. Cl. 137—592 **6 Claims**



2. In a liquid treatment apparatus including a tank having a side wall and an upwardly dished bottom wall and a central opening in the bottom wall, a lower liquid distributor having a

header mounted in said central opening in the bottom wall and a plurality of distributor conduits connected to the header and extending outwardly therefrom at generally uniform angularly spaced locations around the header, the improvement wherein said distributor conduits each include a first straight conduit section extending laterally outwardly from the header toward the side wall of the tank and a second straight conduit section connected to the outer end of the first conduit section by a pipe elbow having a fixed angle of substantially less than 90°, the pipe elbow in each distributor conduit extending oblique to a longitudinal plane defined by the axis of the respective first conduit section and the tank axis, and each second conduit section extending at an acute angle to the longitudinal plane through the respective first conduit section and at an acute angle to a plane perpendicular to the tank axis to provide a liquid distributor having a shallow upwardly dished configuration, and distributor support means for supporting the distributor on the tank bottom, said second conduit sections each having a plurality of T-fittings at spaced locations therealong and lateral conduit sections attached to each of said T-fittings and extending generally horizontally, said distributor support means including a plurality of arms corresponding in number to the number of distributor conduits and supported on said bottom wall to extend outwardly from adjacent the center of the tank at an acute angle to a plane perpendicular to the tank axis and crosswise of at least some of said lateral conduit sections, and means attaching the arms to at least some of said lateral conduit sections to suppport the same.

4,161,964

RESERVOIR FOR FUEL INJECTION SYSTEM

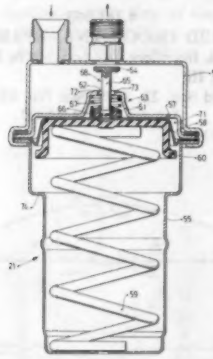
Max Greiner, Gerlingen, and Bernhard Temmen, Ludwigsburg, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,069

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1977, 2702133

Int. Cl.[2] F16L *55/04*; F02M *69/00*

U.S. Cl. 138—26 **5 Claims**



1. A fuel reservoir for a fuel injection system, comprising:

a housing defining a chamber;

an intermediate plate mounted to the housing within the chamber for dividing the chamber into two parts, said intermediate plate having a flow opening and a throttle opening formed therein;

a yieldable reservoir member mounted to the housing within one of the chamber parts and dividing that chamber part into two portions;

reservoir spring means mounted within the chamber portion facing away from the intermediate plate and engageable with one side of the yieldable reservoir member, wherein the yieldable reservoir member lies against the intermediate plate in its rest position under the influence of the reservoir spring means; and

valve means operatively associated with the flow opening and throttle opening in the intermediate plate, said valve means comprising:

a movable valve member; and a valve spring engageable with the movable valve member in the opening position of the valve means when the reservoir experiences a movement to decrease its volume, said movable valve member including:

(i) a shank member that projects through the flow opening and is displaceable by means of the yieldable reservoir member against the force of the valve spring; and

(ii) a valve plate.

4,161,965

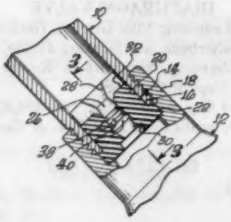
WATER-FLOW CONTROL DEVICE

Thurman L. Merritt, 19114 E. Carroll, Glendora, Calif. 91740

Filed Feb. 25, 1977, Ser. No. 772,127

Int. Cl.[2] F16D *1/02*

U.S. Cl. 138—45 **2 Claims**



1. A liquid flow-control device for positioning between a shower-supply pipe and a shower head, said device comprising:

a main annular body member formed of a resilient material having a central longitudinal bore disposed therethrough,

an inlet orifice,

an outlet orifice,

flow-restrictive means integral with said body member, said flow restrictive means being controlled by exerted compressive forces of liquid flow,

oppositely disposed, flexible body portions defined by a slot extending laterally across the inlet orifice to define the bifurcated portions adjacent the inlet orifice to restrict the opening of said orifice when said flexible wall members are forced inwardly by said compression forces applied against said inclined wall surfaces,

each of said body portions including an inclined wall surface,

said body member including an enlarged annular flange member formed on the end of the body member opposite the flexible body portions and wherein said outlet orifice being disposed therein, and

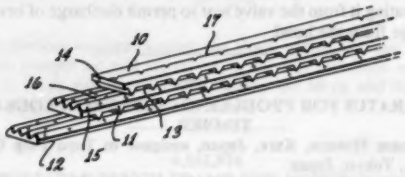
aerating means formed within said bore comprising a plurality of ridges and corresponding grooves formed within said bore interposed between said inlet and outlet orifices.

4,161,966

SPACER FOR COAXIAL TUBE SYSTEMS

Ernst Scheffler; Friedrich Schatz, and Gerhard Ziemek, all of Langenhagen, Fed. Rep. of Germany, assignors to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Continuation of Ser. No. 734,663, Oct. 12, 1976, abandoned.
This application Oct. 31, 1977, Ser. No. 847,083
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1975, 2547423
Int. Cl.[2] F16L *9/18*
U.S. Cl. 138—112 3 Claims



1. A coaxial tube system, including a helical spacer for spacing an inner tube of the system from another tube thereof in coaxial relation, there being a temperature gradient between the tubes such as, for example, in an electric cable operated in a superconducting state or in the inner tube of such a system for carrying fluid media, said helical spacer comprising:

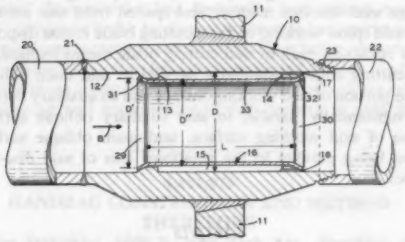
a plurality of flat elongated, relatively narrow, superimposed elements of an insulating material, the elements being so disposed and at least some of them having a profiled surface established by notches separated by roof-like extremeties, the notches of surfaces of respective two of the elements facing each other extending transversely to each other so that individual, adjacent elements will contact each other at spaced points on the respective roof-like extremeties only, said elements being wound onto the inner tube in spaced-apart loops and being twisted, thereby holding the outer tube on the inner tube.

4,161,967

THERMAL SLEEVE

Theodore S. Sprague, Hudson, Ohio, assignor to The Babcock & Wilcox Company, New York, N.Y.

Filed Feb. 3, 1978, Ser. No. 875,023
Int. Cl.[2] F16L *9/10, 9/18*
U.S. Cl. 138—113 4 Claims



1. A fluid flow nozzle having a bore extending therethrough, a pair of axially spaced rings of equal inner diameter being disposed within the bore, each ring having an inner peripheral end surface diverging outwardly at an angle whose tangent is equal to the ratio of the ring inner diameter to the axial length between the respective diverging end surfaces of the rings, and a thermal sleeve disposed within the bore, the sleeve having diverging end portions whose outer peripheral surfaces conform to and are in contact with the diverging end surfaces of said rings, whereby said thermal sleeve maintains sealing contact with component parts of the nozzle during thermal expansion and contraction without giving rise to stress causing restraints.

4,161,968

FOOD CASING AND METHOD OF PREPARING SAME

Jerome J. M. Rasmussen, Burbank, Ill.; Richard C. Waldman, Glen Rock, Pa., and Richard L. Oliver, Schaumburg, Ill., assignors to Union Carbide Corporation, New York, N.Y.

Filed Nov. 3, 1977, Ser. No. 848,065
Int. Cl.[2] F16L *11/02*
U.S. Cl. 138—118.1 19 Claims

1. A cellulosic food casing including on the interior surface of said food casing a release coating comprising at least about 0.286% by weight of water soluble cellulose ether and at least about 0.029% by weight of a cationic thermosetting resin.

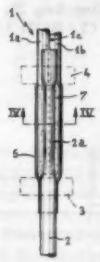
18. A cellulosic food casing including on the interior surface of said food casing a release coating comprising at least about 0.286% by weight of a water soluble cellulose ether and at least about 0.029% by weight of a water soluble protein having a molecular weight above about 10,000 and an isoelectric point in the range of from about pH_2 to pH_6.

4,161,969

METHOD TO CONNECT TWO STRING-LIKE MEMBERS

Rene' Neyraud, Saint Cyr au Mont d'Or, France, assignor to Verdol, SA., Caluire, France

Filed Apr. 14, 1978, Ser. No. 896,529
Claims priority, application France, Apr. 18, 1977, 77 12475
Int. Cl.[2] D03C *3/44;* B25G *3/36*
U.S. Cl. 139—90 9 Claims



1. The method of connecting to a string-like member an elastically extensible member to provide a return-spring action when the extensible member is stretched within a predetermined stretch limit, the extensible member being of a type which reduces in diameter when stretched, including the steps of:

stretching a portion of said extensible member to reduce its diameter;

disposing the stretched portion adjacent to a connecting portion of the string-like member;

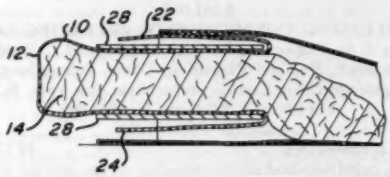
applying to said adjacent stretched and connecting portions of the members a settable substance to bond them together;

disposing a covering material about said stretched and connecting portions to tightly confine said settable substance;

setting said substance while confined;

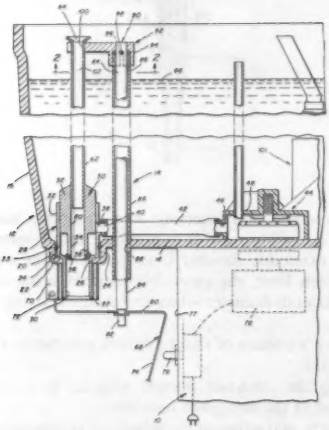
and releasing said stretched portion of said extensible member when said substance has been set.

4,161,970
METHOD AND APPARATUS FOR FILLING DOWN GARMENTS
George D. Lamb, 802 S. Sherman St., Longmont, Colo. 80501
Division of Ser. No. 810,523, Jun. 27, 1977, Pat. No. 4,094,126.
This application Feb. 13, 1978, Ser. No. 877,169
Int. Cl.[2] B65B 3/16
U.S. Cl. 141—114 3 Claims



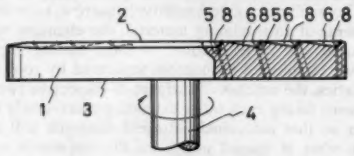
1. The combination of a packet of down and an inserter/extractor tube for dispensing down from the packet comprising:
(a) a flexible plastic film, tubular packet for down having one permanently sealed end and a releasable seal at the opposite end;
(b) a pair of manipulating flaps depending from opposed sides of said packet extending beyond said releasable seal; and,
(c) an essentially rigid tube of approximately the diameter of said tubular packet and of a length of approximately ¼ to 1 length of said packet, whereby said tubular packet may be freely inserted in said rigid tube and said tubular packet may be easily pulled by said flaps from the inside back along the outside of the rigid tube so as to be turned inside out and dispense the down from the tubular packet.

4,161,971
DISPENSER FOR PERISHABLE BEVERAGES
William Arzberger, Medfield, and Merle S. Brown, Cohasset, both of Mass., assignors to Jet Spray Corp., Waltham, Mass.
Continuation-in-part of Ser. No. 697,923, Jun. 21, 1976, abandoned. This application Aug. 26, 1977, Ser. No. 827,954
Int. Cl.[2] B67D 5/62
U.S. Cl. 141—362 16 Claims



1. A refrigerated beverage dispenser comprising
a base and a bowl on the base for storing refrigerated beverage,
a first opening in the bottom of the bowl,
an outlet tube mounted in the bowl and registering with the opening and with at least the major portion of its length being submerged in the refrigerated beverage when the bowl is filled with beverage, said tube being made of a material having a high thermal conductivity so as to provide a good heat exchange relationship between the beverage and the tube, allowing the tube to achieve the temperature of the beverage,
a valve movable in the outlet tube within the portion of the tube positioned to be submerged in the beverage in the bowl,
a port in the major outlet tube portion through which beverage in the bowl is discharged into and through the tube,
a valve seat in the outlet tube downstream of the port and cooperating with the valve to control the discharge of beverage from the bowl,
and an actuator operatively connected to the valve for unseating it from the valve seat to permit discharge of beverage from the bowl.

4,161,972
APPARATUS FOR PRODUCING CHIPS FROM LOGS OF TIMBER
Morimasa Hanaya, Kure, Japan, assignor to Toyo Pulp Co., Ltd., Tokyo, Japan
Filed Dec. 31, 1975, Ser. No. 645,863
Claims priority, application Japan, Jan. 8, 1975, 50-4479; Feb. 23, 1975, 50-75506; Feb. 28, 1975, 50-23847; May 15, 1975, 50-56751; Aug. 26, 1975, 50-102588
Int. Cl.[2] B27C 1/60
U.S. Cl. 144—176 20 Claims

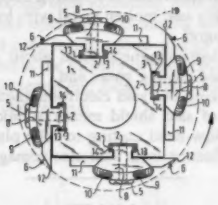


1. An apparatus for producing chips from logs of timber, comprising a disc-like member having a front face and a rear face, a rotating shaft connected coaxially to a central region of said rear face, said front face being provided with means defining at least one spiral working surface which consists of main and auxiliary oblique surface portions, said spiral working surface extending along a spiral path from adjacent the central region of said disc-like member to the peripheral edge thereof, said main and auxiliary surface portions being inclined relative to one another with a predetermined angle included therebetween, means defining a plurality of openings extending through said disc-like member and spaced from one another along said spiral working surface, cutting blade means disposed in said openings, each of said cutting blade means including a main cutting edge substantially parallel to said main oblique surface portion of said working surface and an auxiliary cutting edge substantially parallel to said auxiliary oblique surface portion of said working surface, said main oblique surface portion being parallel to the rotational axis of said disc-like member.

4,161,973
DEVICE FOR FASTENING A CHISEL TO A ROTATABLE CHISEL BLOCK OF A WOOD WORKING MACHINE
Leefert Klooster, De Wijk, Netherlands, assignor to L. Klooster & Zonen B.V., Zaandam, Netherlands
Filed Nov. 7, 1977, Ser. No. 849,350
Int. Cl.[2] B27G 13/04
U.S. Cl. 144—224 5 Claims

1. A fastening device for securing a wood working chisel to a rotatable chisel block having a fastening slot therein, which comprises a clamping plate adapted to sandwich the chisel

between it and the chisel block and having an opening, a bolt extending through said opening and a nut captive within said slot and engaged with said bolt, said clamping plate including a lateral extension projecting into said slot and provided with



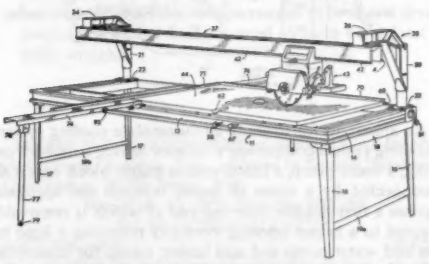
cam portions engaged against the block within said slot, a set screw carried by said lateral extension and bottomed in said slot to force said cam portions against the block and fix said clamping plate relative to said block.

4,161,974

PORTABLE BENCH FRAME FOR POWER TOOLS

Lionel Patterson, P.O. Box 117, Markham, Ontario, Canada (L3P 3J5)

Filed Dec. 23, 1977, Ser. No. 863,861
Int. Cl.[2] B25H *1/02*
U.S. Cl. 144—287 **17 Claims**



1. A bench frame suitable for precision woodworking comprising a bench having a substantially large rectangular frame body, two pairs of foldable support members provided at two ends of said frame body and operative to support said frame body in a horizontal manner, two spaced telescopic columns provided at two corners of one longitudinal edge portion of said frame body, said columns having two cantilever members provided thereon extending forwardly in a spaced manner above said frame body, an elongated traverse beam mounted to said cantilever members, said traverse beam being operative to receive selected tools to be slidably mounted thereon, and said columns being adjustable simultaneously for selectively raising or lowering said traverse beam with respect to said frame body.

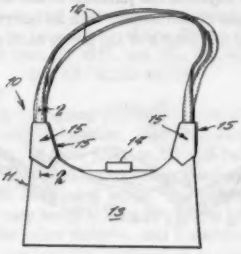
4,161,975

HANDBAG CONSTRUCTION AND METHOD THEREFORE

Charles Stakofsky, 1660 E. New York Ave., Brooklyn, N.Y. 11212

Filed Dec. 23, 1977, Ser. No. 863,742
Int. Cl.[2] A45C *13/26*
U.S. Cl. 150—33 **1 Claim**

1. A handbag, comprising in combination a bag and at least one strap secured to said bag, said bag including a pair of opposite side panels peripherally stitched together except along an upper edge thereof fitted with interpivotable frames having a lock, and also being left unstitched at a terminal of a plurality of tapering portions, said tapering portions stitched together along their side edges forming tubular portions receiving the ends of said straps, and said tubular portions being



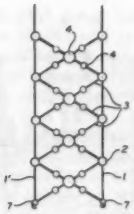
each enclosed by a cuff draped around an outer side thereof providing an attractive appearance.

4,161,976

ANTI SKID CHAIN

Wilhelm Schmitt, Heppenheim-Erbach, and Herbert Schumacher, Gorxheimertal, both of Fed. Rep. of Germany, assignors to Firma Carl Freudenberg, Weinheim, Fed. Rep. of Germany

Filed Jun. 6, 1977, Ser. No. 803,925
Claims priority, application Fed. Rep. of Germany, Jul. 10, 1976, 2631147
Int. Cl.[2] B60C *27/06*
U.S. Cl. 152—239 **12 Claims**



1. An antiskid tire chain comprising a network positionable during use in the region of the tire tread, including two parallel chains extendable along opposite sides of the tread, a plurality of rings interconnected into each chain for guiding same, a plurality of straps each interconnecting one ring from one chain with one ring from the other chain and each crossing over another strap, and at least one post connected to a strap in the region of each intersection, each post being composed of synthetic material and comprising a circular member having a T-shaped cross-section having the larger diameter portion comprising a planar surface contacting the surface of the tire during use and wherein the straps pass through the larger diameter portion entering and leaving same spaced from said planar surface.

4,161,977

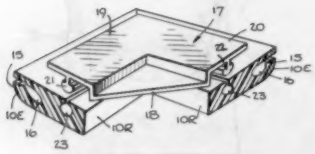
FRAME ASSEMBLY FOR MOUNTING FABRIC SHEETS

Floyd Baslow, 100 Lafayette St., New Bethlehem, Pa. 16242

Continuation-in-part of Ser. No. 728,285, Sep. 30, 1976, Pat. No. 4,053,008. This application Sep. 19, 1977, Ser. No. 834,472
Int. Cl.[2] A47G *1/10*
U.S. Cl. 160—381 **11 Claims**

1. A frame assembly for mounting and displaying a sheet of decorative fabric material having predetermined dimensions, said assembly comprising a set of four mitered pieces, and coupling elements joining said pieces together at their mitered

corners at the rear to form a rectangular frame whose dimensions fall somewhat short of the sheet dimensions to an extent equal to the margins of the sheet, each frame piece having inlet jaws which lie adjacent the junction of the outer edge and the back thereof and communicate with an internal storage channel running the full length of the piece, each piece also having



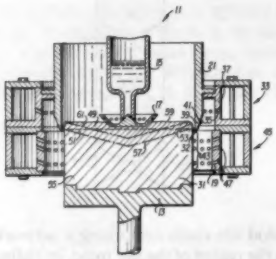
a pressure-sensitive adhesive band on the front face running the full length thereof to secure the ends of the sheet to the frame, the margins of the sheet ends being insertable into the channels of said pieces through said inlet jaws which clamp onto said margins to maintain the sheet supported thereby in smooth condition.

4,161,978

INGOT CASTING

Carson L. Brooks; John W. Carson, and Garland T. Culbreth, all of Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Filed Jul. 19, 1978, Ser. No. 926,118
Int. Cl.[2] B22D *11/12, 27/02*
U.S. Cl. 164—49 **14 Claims**



1. A system for continuous casting an elongated ingot comprising:

a molten metal supply means for continuously supplying molten metal to a first end of said ingot at a casting zone;

a means for moving a second end of said ingot downwardly away from said supply means;

a means for cooling said molten metal at said casting zone close to said supply means to solidify said molten metal with low-head casting and thereby form said ingot;

an electromagnetic inductor positioned adjacent said casting zone, said electromagnetic inductor being energized by an alternating current source for producing an electromagnetic field at said ingot downstream of said casting zone;

an alternating power source with a frequency higher than 2,200 Hz; and,

a metallic shield means surrounding said casting zone at a location intermediate said casting station and said inductor for blocking out virtually all of said electromagnetic field above the lower end of said shield means at said casting zone but allowing said electromagnetic field to exist at said ingot immediately below said casting zone.

7. A method for continuously casting an elongated ingot comprising the steps of:

depositing molten metal at a first end of an ingot with a supply means;

moving a second end of said ingot downwardly away from said supply means;

cooling said molten metal at a casting zone close to said first end to solidify said molten metal with low-head casting to form said ingot;

creating an electromagnetic field about said ingot downstream of said casting zone; and,

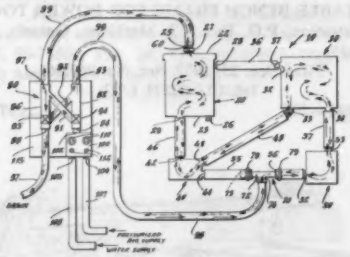
virtually blocking out said electromagnetic field above the lower end of said shield means at said casting zone to allow said low-head casting to take place without virtually any influence from said electromagnetic field.

4,161,979

METHOD OF AND APPARATUS FOR FLUSHING AN AUTOMOBILE COOLING SYSTEM

Earl J. Stearns, 62 Flushing Ave., Fairfield, Conn. 06432

Filed Apr. 25, 1977, Ser. No. 790,325
Int. Cl.[2] F28G *9/00*
U.S. Cl. 165—95 **14 Claims**



1. An apparatus for flushing an automobile cooling system, said cooling system comprising a radiator having a radiator cap opening, a water pump, a heater and an engine block which are interconnected by a series of hoses, wherein the apparatus comprises a first flexible hose one end of which is removably connected to a heater opening normally receiving a hose between said water pump and said heater, means for connecting said first flexible hose to said heater, plugging means to prevent any fluid flow through said water pump to heater hose, a second flexible hose one end of which is removably connected to said radiator cap opening, means for connecting said second flexible hose to said radiator cap opening, a pressurized supply means for a flow of a cleaning fluid, and an "X" connector adapted to receive the ends of said first and second flexible hoses opposite said cooling system, said "X" connector being connected to said supply means, said "X" connector having a valve means whereby said flow of said cleaning fluid from said supply means is directed into said first flexible hose while at the same time the exiting flow of said cleaning fluid from said radiator cap opening is directed to an outlet of said "X" connector, said valve means also being capable of being selectively reset so as to redirect said flow of cleaning fluid into said second flexible hose while at the same time directing the exiting flow of said cleaning fluid from said heater through said first flexible hose to said outlet.

4,161,980

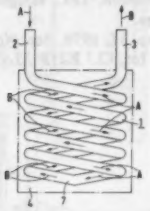
COOLING CAPSULE FOR THYRISTORS

Heribert Rüger, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Aug. 29, 1977, Ser. No. 828,421
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1976, 2643072
Int. Cl.[2] F28F *7/02*; H01L *3/00*
U.S. Cl. 165—168 **8 Claims**

1. In a cooling capsule for use with thyristors wherein the

capsule includes a core having first and second end faces adapted for heat-conducting connection to a thyristor and wherein a cooling coil is cast within said core for providing a flow path for liquid coolant therethrough, said cooling coil having first and second ends extending from said core to provide inlet and outlet openings and having subsections which are located in said core in respective spaced first and second planes which extend in the vicinity of and approximately parallel to said first and second end faces of said core, respectively, the improvement comprising:



said cooling coil being formed as a helix which extends from said first end to a region at which it turns around and extends to said second end in the manner of a bifilar winding, said subsections which carry coolant in opposite directions being alternatingly arranged adjacent one another; and

subsections of said helix being arranged to lie in said first and second planes and being formed so as to be at least partially straight.

4,161,981

METHOD FOR RECOVERING HYDROCARBONS

Jack H. Park, Houston, Tex., assignor to Texaco Development Corporation, White Plains, N.Y.

Filed Feb. 13, 1978, Ser. No. 877,150
Int. Cl.[2] E21B *43/22, 43/24*
U.S. Cl. 166—261 **9 Claims**

1. A method for recovering hydrocarbons from an underground reservoir penetrated by an injection well and a production well which comprises:

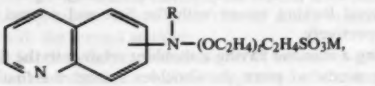
(a) establishing a burning zone in said reservoir at the face of said injection well,

(b) introducing a combustion-supporting gas into said reservoir via said injection well to propagate said zone toward said production well,

(c) terminating the injection of the combustion-supporting gas into the reservoir,

(d) injecting into the said reservoir via said injection well an aqueous drive fluid having dissolved therein a small amount of a sulfonated interfacial tension reducer,

(e) recovering the displaced hydrocarbons via the said production well, and wherein the said sulfonated interfacial tension reducer has the formula:



wherein t is a number of from 3 to about 40, and M is selected from the group consisting of hydrogen, sodium, potassium and ammonium, R is selected from the group consisting of hydrogen and $-(OC_2H_4)_sC_2H_4SO_3M$, where s is a number of from 3 to about 40 and M has the same meaning as previously described.

4,161,982

HIGH CONFORMANCE ENHANCED OIL RECOVERY PROCESS

Vernon H. Schievelbein; Mohan V. Kudchadker; James E. Varnon, all of Houston, and Lawrence E. Whittington, Katy, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,502
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—269 **25 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing water whose salinity is from 5,000 to 220,000 parts per million total dissolved solids, said formation containing at least two distinct pertoleum-containing strata, the permeability of at least one of said strata being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of said formation, comprising

(a) injecting a first aqueous oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) after said first aqueous oil displacing fluid has passed through at least one of said more permeable strata to the production well, discontinuing injecting said fluid and injecting into said stratum at least one aqueous fluid containing an emulsifying surfactant mixture comprising

(1) from 0.2 to 5 percent by weight of an organic sulfonate comprising an alkyl or alkylaryl sulfonate having the following formula:

$$R—SO_3M$$

wherein R is an alkyl group containing from 6 to 20 carbon atoms, or an alkylaryl group selected from the group consisting of benzene, toluene or xylene having attached thereto at least one alkyl containing from 6 to 20 carbon atoms, and M is ammonium, sodium, potassium, or lithium, or a sodium, potassium, lithium, or ammonium salt of petroleum sulfonate which is at least partially water soluble and has a median equivalent weight in the range of 350 to 420;

(2) from 0.01 to 5.0 percent by weight of a dialkylarylpolyalkoxyalkylene sulfonate having the following formula:

$$R_a(OR_a')_{na}R_a''SO_3M_a$$

wherein R_a is a dialkylaryl group selected from the group consisting of benzene and toluene having attached thereto at least two alkyl groups, each having from 3 to 14 carbon atoms, R_a' is ethylene or a mixture of ethylene and higher alkylene with relatively more ethylene than higher alkylene, na is a number from 2 to 10, R_a'' is ethylene, propylene, hydroxypropylene or butylene, and M_a is ammonium, sodium, potassium or lithium; and

(3) from about 0.01 to about 10.0 percent by weight of an alkylpolyalkoxyalkylene sulfonate or alkylarylpolyalkoxyalkylene sulfonate having the following formula:

$$R_b—(OR_b')_{nb}—R_b''SO_3M_b$$

wherein R_b is an alkyl group having from 9 to 25 carbon atoms or an alkylaryl group selected from the group consisting of benzene, toluene or xylene having attached thereto one alkyl group, having from 9 to 15 carbon atoms; R_b' is ethylene or a mixture of ethylene and higher molecular weight alkylene with relatively more ethylene than higher molecular weight alkylene; nb is a number from 2 to 10, R_b'' is ethylene, propylene, hydroxy propylene, or butylene and M_b is a monovalent

cation selected from the group consisting of sodium, potassium lithium and ammonium, said emulsifying surfactant mixture forming a macro-emulsion in the flow channels of the most permeable strata of the formation, thereby reducing the permeability of the strata invaded by the emulsifying fluid; and

(c) thereafter injecting a second aqueous oil displacing fluid into the formation, said oil displacing fluid invading at least one stratum not invaded by the oil displacing fluid of step (a) above, displacing petroleum therein toward the production well where it is recovered to the surface of the earth.

4,161,983

HIGH CONFORMANCE OIL RECOVERY PROCESS

Vernon H. Schievelbein, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Dec. 22, 1977, Ser. No. 863,503
Int. Cl.[2] E21B *43/22*
U.S. Cl. 166—269 **19 Claims**

1. A method of recovering petroleum from a subterranean, petroleum-containing formation, said formation containing at least two distinct petroleum-containing strata or layers, the permeability of at least one of said strata being at least 50 percent greater than the permeability of the other stratum, said formation being penetrated by at least one injection well and by at least one production well, both wells being in fluid communication with substantially all of said formation, comprising

(a) injecting a first aqueous oil-displacing fluid into the formation via the injection well, said fluid passing through at least one of the more permeable strata of said formation and displacing oil therein toward the production well, from which it is recovered to the surface of the earth;

(b) after said first aqueous oil displacing fluid has passed through at least one of said more permeable strata to the production well, discontinuing injecting said fluid and injecting into said stratum an aqueous fluid containing an emulsifying surfactant mixture comprising (1) from 0.01 to 10.0 percent by weight of an alkylpolyalkoxyalkylene sulfonate or alkylarylpolyalkoxyalkylene sulfonate having the following formula:

$$R—(OR')_n—R''SO_3M$$

wherein R is an alkyl group, linear or branched, having from 9 to 25 carbon atoms or an alkylaryl group selected from the group consisting of benzene, toluene and xylene having attached thereto at least one alkyl group, linear or branched, having from 9 to 15 carbon atoms; R' is ethylene or a mixture of ethylene and higher molecular weight alkylene with relatively more ethylene than higher molecular weight alkylene; n is a number including fractional numbers, from 2 to 10; R'' is ethylene, propylene, hydroxy propylene, or butylene and M is a monovalent cation selected from the group consisting of sodium, potassium, lithium and ammonium, and (2) from about 0.1 to about 5.0 percent by weight of a water insoluble nonionic surfactant having the following formula:

$$R'''(OR'''')_nOH$$

wherein R''' is a branched or linear alkyl group having 9 to 25 carbon atoms, or an alkylaryl group selected from the group consisting of benzene, toluene and xylene having attached thereto at least one alkyl group, linear or branched, containing from 9 to 15 carbon atoms, R'''' is ethylene or a mixture of ethylene and propylene with relatively more ethylene than propylene; and n is a number from 2 to 10, said emulsifying surfactants forming a macro-emulsion in the flow channels of the most permeable strata of the formation, thereby reducing the permeability of the strata invaded by the emulsifying fluid; and

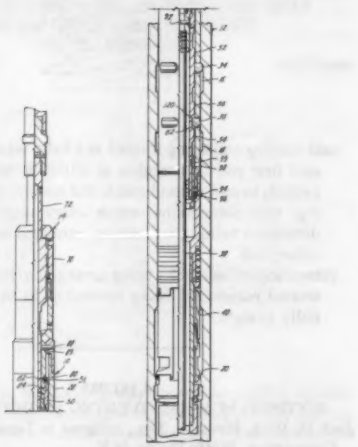
(c) thereafter injecting a second aqueous oil displacing fluid into the formation, said oil displacing fluid invading at least one stratum not invaded by the oil displacing fluid of step (a) above, displacing petroleum therein toward the production well where it is recovered to the surface of the earth.

4,161,984

WELL LOCKING DEVICE AND METHOD

Fred E. Watkins, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed Sep. 11, 1978, Ser. No. 940,819
Int. Cl.[2] E21B *23/02*
U.S. Cl. 166—315 **10 Claims**



1. A well lock for locking in the bore of a tubing in a well, said tubing including first and second recesses comprising,

a lock housing carrying first and second locking means,

seal means positioned on the exterior of the housing and adapted to seal with the bore of the tubing,

locator means on the housing for positioning the first and second locking means aligned with the first and second recesses in the tubing,

a mandrel positioned for telescoping movement in the housing,

means on the mandrel for locking the first locking means in the first recess on longitudinal movement of the mandrel,

means on the mandrel for engaging said second locking means for preventing unlocking of the first locking means if pressure is applied to the seal to move the housing upwardly, and

releasable locking means between the mandrel and the housing.

9. A method of locking a well lock having first and second locking means in a tubing nipple in a well having first and second recesses comprising,

moving the well lock into the nipple and aligning the first and second locking means with the first and second recesses respectively,

moving a mandrel having a shoulder relative to the first locking means to place the shoulder behind the first locking means thereby locking the first locking means in the first recess,

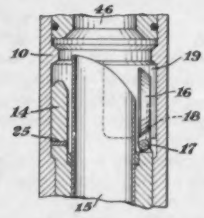
if the well pressure below the well lock is sufficient to move the well lock upwardly, moving the second locking means inwardly into engagement with the mandrel thereby holding the shoulder in a locked position behind the first locking means.

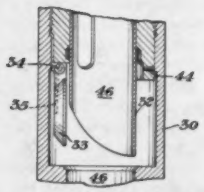
4,161,985

TOOL FOR REMOVING FLUIDS AND LOOSE MATERIAL FROM AN EARTH FORMATION

Onazip J. Fournier, and Wayne F. Nelson, both of Wichita Falls, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 7, 1978, Ser. No. 922,928
Int. Cl.[2] E21B 37/00, 41/00
U.S. Cl. 166—321 5 Claims





1. A tool for removing fluids and loose material from an earth formation, the tool comprising:

a first valve unit, which includes a first sleeve member having an upper and lower end, a hollow piston positioned inside the sleeve member, and slidable downwardly from a rest position to a latch position, and having an upper and lower end, a first hollow mandrel positioned inside the piston, and having an upper and lower end, a first flapper disk hingably mounted on the inside of the first sleeve member above the upper end of the first mandrel;

the first disk being movable, by the upper end of the first mandrel, from a closed position to an open position, upon downward movement of the piston to the latch position;

a first annulus being defined between the first sleeve member and the lower end of the piston, the first sleeve member having first intake ports therein which communicate with the first annulus;

a second valve unit, which includes a second sleeve member having an upper and lower end, a second hollow mandrel positioned inside the second sleeve member, and slidable downwardly from a rest position to a latch position, and having an upper and lower end, a second flapper disk hingably mounted on the inside of the second sleeve member below the lower end of the second mandrel;

the second disk being movable, by the lower end of the second mandrel, from a closed position to an open position, upon downward movement of the second mandrel to the latch position;

a second annulus being defined between the second sleeve member and the second mandrel, the second sleeve member having second intake ports therein which communicate with the second annulus;

a surge chamber section which connects the lower end of the first sleeve member with the upper end of the second sleeve member;

the upper end of the first sleeve member being adapted for fastening into a first tubing string, and the lower end of the second sleeve member being adapted for fastening into a second tubing string; and

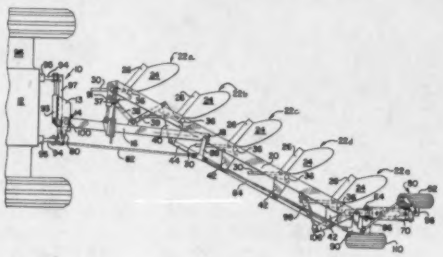
a central conduit being defined lengthwise through the first valve unit, the chamber section, and the second valve unit, for enabling fluids and loose material to flow from the earth formation through the recited valve units and chamber section and into the tubing strings.

4,161,986

PLOW AND PLOW MOUNTING BRACKET THEREFOR

Gerald G. Ward, Naperville, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Sep. 19, 1977, Ser. No. 834,629
Int. Cl.[2] A01B 61/04, 69/08
U.S. Cl. 172—266 11 Claims



1. A plow of the type adapted to be pulled by a traction vehicle and including a main frame having a horizontal beam inclined relative to the direction of travel of said vehicle, said horizontal beam having upper and lower surfaces, and a plurality of plow bottoms supported by said horizontal beam wherein the improvement comprises:

for each of said plow bottoms;

a vertical bearing secured to said horizontal beam,

a plow bottom mounting bracket pivotally supported on said horizontal beam by said vertical bearing, said mounting bracket having flat upper and lower surfaces and a hub portion formed thereon and extending above and below said bracket surfaces, said surfaces extending laterally and forwardly of said hub portion, said bracket also having a horizontal plow pivotal mount located adjacent and rearward of said hub portion,

a vertical post having upper and lower ends, the lower end of said vertical post being positively connected to said hub portion for rotation therewith and extends upwardly therefrom terminating in a free upper end, such that when said free upper end of said vertical post is inserted through said vertical bearing the hub portion provides beam working support and said flat upper surface of the mounting bracket is in close proximity and parallel to the lower surface of said horizontal beam,

said mounting bracket further including a tool mounting section that extends upwardly from said flat upper surface,

means retaining said vertical post in said vertical bearing such that pivotal movement therebetween is permitted,

means for fixing said plow mounting bracket relative to said main frame at selected positions, and

trip linkage means connecting the plow bottom to said mounting section.

4,161,987

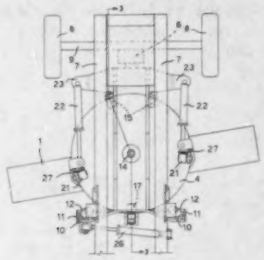
TRACTOR GRADER

Richard G. Tolmer, Norwood, Australia, assignor to Suzanne G. Tolmer, Norwood, Australia, a part interest

Filed Nov. 14, 1977, Ser. No. 850,962
Claims priority, application Australia, Nov. 15, 1976, PC8146
Int. Cl.[2] E02F 3/76
U.S. Cl. 172—791 3 Claims

1. A grader comprising a tractor with an elongated chassis, said grader including a grader blade on a turntable, characterised in that said turntable comprises a lower plate to which the blade is attached, and a co-operating upper plate, said lower

plate being supported by a plurality of spaced rollers engaging the lower surface of the lower plate, said rollers being mounted in brackets carried by said upper plate, said upper plate being supported by a frame universally mounted at its forward end to the forward portion of the tractor, and at its rearward end by a plurality of spaced lift rams acting between said turntable and support members fixed to said chassis, said frame at its forward end including a cross member, hydraulic rams for angling said



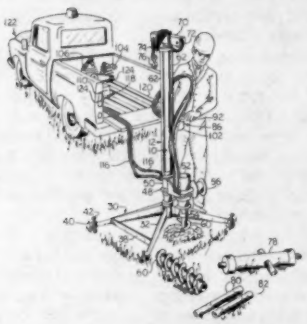
blade extending from said cross member to further brackets on said blade, said further brackets for said angling rams extending upwardly and carrying rollers engaging the top surface of said upper plate, whereby operation of the angling rams causes relative rotation of the lower plate relative to the upper plate, scrapers being provided to deflect spoil from the upper plate in the path of said rollers as said lower plate rotates relative to the upper plate.

4,161,988

PORTABLE EARTH CORE SAMPLING MACHINE

Ronald D. Hart, 1695 One Washington Plz., Tacoma, Wash. 98402

Filed Dec. 5, 1977, Ser. No. 857,391
Int. Cl.[2] E21C 9/00
U.S. Cl. 173—32 **10 Claims**



1. A portable machine for drilling into the earth and taking earth core samples during soil testing operations, comprising:

(a) a fluid cylinder subassembly comprising in turn: a fluid cylinder, serving also as the principal stationary body portion of this portable machine, a piston rod, serving also as the principal extendable body portion of this portable machine; an elongated guide member firmly secured to the outside of the fluid cylinder, between fluid ports located at both the top and bottom of the fluid cylinder; a transverse header box having a sheave mounted at each of its ends and in turn mounted on the extending end of the piston rod; and a base secured to the fluid cylinder to position the fluid cylinder subassembly on the earth while taking earth core samples;

(b) a traveling support subassembly for a fluid power unit subassembly comprising, in turn, a partial sleeve to be guided up and down the outside of the fluid cylinder and kept from turning by the elongated guide member; power transmitting tie rods secured between partial sleeve and the transverse header box, whereby the traveling support subassembly moves along the exterior of the fluid cylinder in direct relation to the movement of the piston rod in and out of the cylinder; and a guide for the tie rods secured to the fluid cylinder at its end, from which the transverse header box is raised and lowered upon movement of the piston rod;

(c) a fluid driving power unit subassembly, mounted on the traveling support subassembly, comprising in turn a driving fluid motor and its attachment accessories to secure and to rotate a hollow core digging auger, and to secure and to rotate, alternatively, a capstan, to receive and to power a rope passing over the sheaves of the transverse header box, when one end of the rope is attached to a calibrated hammer used in preparing a core sample, and the other end of the rope is guided by an operator to, around, and from the capstan;

(d) a fluid control subassembly secured to the elongated guide member at an initially selected optional height to be conveniently manipulated by an operator, comprising in turn, a four way valve to alternatively direct the fluid to the fluid motor to rotate it in respective clockwise or counterclockwise directions, and to alternatively direct fluid to the fluid cylinder to extend or retract the piston and therefore correspondingly move the transverse header box, and also correspondingly move, via the tie rods, the traveling support subassembly on which the fluid power unit subassembly is mounted; and a fluid control valve serving alternatively as a throttle to control the speed of the fluid motor rotating a hollow core digging auger, and as a throttle to control the speed of the extension and retraction of the piston and consequently, also the transverse header box, and the fluid power unit subassembly, via the tie rods and the traveling support subassembly; and

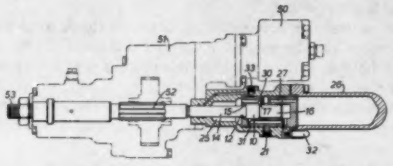
(e) a fluid power source and distribution subassembly, comprising, in turn, a fluid pump; a motor to drive the fluid pump; a fluid tank; a housing to secure together the fluid pump, motor, and tank in a conveniently handled power pack; and fluid hoses and fittings to conduct fluid to and from the often remotely located power pack, during distribution of the fluid via the fluid control subassembly to the fluid cylinder subassembly and to the fluid driving power unit subassembly, when earth core samples are being taken during soil testing operations.

4,161,989

RECIPROCATING HYDRAULIC MOTORS

Antony D. Barber, Truro, England, assignor to CompAir Construction & Mining Limited, Camborne, England

Filed Oct. 4, 1977, Ser. No. 839,190
Claims priority, application United Kingdom, Aug. 10, 1976, 41967/76
Int. Cl.[2] B25D 9/00
U.S. Cl. 173—105 **10 Claims**



1. A reciprocating hydraulic motor including a cylinder, a piston mounted to reciprocate in the cylinder and having opposed faces exposed respectively to the pressure in a com-

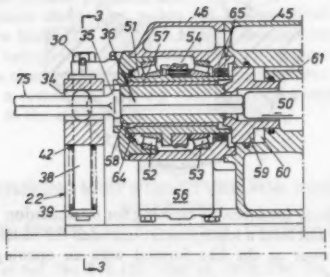
pression chamber and the pressure in a biasing chamber communicating permanently with a constant supply pressure so that reciproction of the piston alternately increases the biasing chamber and vice versa, and means defining ports controlled by the piston to connect the compression chamber directly to a pressure supply throughout one end portion of a stroke, and to connect the compression chamber directly to exhaust throughout an opposite end portion of the stroke, and throughout a compression-expansion travel between these end portions to cut off the compression chamber from all external connection so that the liquid in it alternately expands over a higher range of pressure and is compressed over a lower range of pressure.

4,161,990

ROCK DRILLING APPARATUS

Bo E. Forsberg, Vällingby, and Carl G. B. Ekwall, Saltsjöbaden, both of Sweden, assignors to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Oct. 31, 1977, Ser. No. 847,043
Claims priority, application Sweden, Nov. 4, 1976, 7612275
Int. Cl.² B25D *9/00*
U.S. Cl. 173—105 **12 Claims**



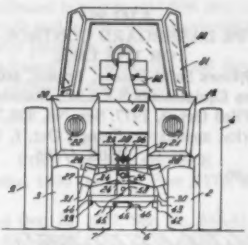
1. Rock drilling apparatus comprising:
a feed beam (**11**);
a slide (**12**) axially displaceable along said feed beam;
a motor (**19**) coupled to said slide for axially displacing said slide along said feed beam;
a hammer drill (**13**) mounted to said slide (**12**) for axial displacement along said feed beam (**11**), said drill (**13**) being pivotably mounted at its rear end on said slide (**12**) by means of a transverse hinge connection (**20–25**);
said drill (**13**) comprising a housing having a main portion (**45**) in which an impact motor (**50**) is located and a detachable front portion (**46**) including a motor and gearing unit, said front portion being detachable from said main portion; said motor and gearing unit of said front portion including bearings (**52,53**) and sealing rings (**64, 65**) in front of and at the rear of said bearings, said sealing rings protecting said bearings also when the motor and gearing unit is detached from the remainder of said drill, said front portion (**46**) having a front aperture therein for receiving the rear end (**36**) of a drill string (**75**), the drill string (**75**) being freely insertable in and retractable out of said front aperture; and
said slide (**12**) comprising retainer means (**37, 38; 73**) for preventing the drill string (**75**) from being pulled out of said drill.

4,161,991

TRACTORS

Cornelis van der Lely, 7, Bruschenrain, Zug, Switzerland

Continuation of Ser. No. 683,940, May 6, 1976, Pat. No. 4,131,170. This application Jun. 28, 1978, Ser. No. 919,854
Claims priority, application Netherlands, May 12, 1975, 7505526
Int. Cl.² B60K *17/28, 5/08*
U.S. Cl. 180—53 FE **10 Claims**



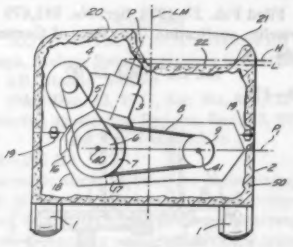
1. A tractor for agricultural purposes which comprises: a frame; a pair of front ground engaging wheels and a pair of rear ground engaging wheels mounted on said frame and providing support therefor; a lifting device mounted on the front of said frame and a further lifting device mounted on the rear of said frame; a driver's seat mounted on the same frame which is relatively remote from said front lifting device and proximate to said rear lifting device whereby an operator in said seat has a substantially unobstructed view of said rear lifting device; and a pair of engines operatively connected to said rear wheels, one of said engines mounted on each side of said frame whereby they are parallel to and spaced on either side of the longitudinal center line of the tractor, said engines being completely forward of said driver's seat and so positioned and spaced apart whereby an operator in said seat has a substantially unobstructed view of said front lifting device in a line-of-sight passing between said engines.

4,161,992

VEHICLE WITH INTERNAL-COMBUSTION ENGINE

Theodor Abels, and Bernhard Götz, both of Aschaffenburg, Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,299
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1976, 2659282
Int. Cl.² B60K *17/10*
U.S. Cl. 180—306 **8 Claims**



1. A vehicle comprising:
a chassis having a vertical longitudinal median plane extending in the direction of travel of the vehicle;
a piston-type internal-combustion engine having a crankshaft extending parallel to said plane; and

a hydrostatic transmission including a hydrostatic pump and at least one hydrostatic motor connected to a wheel of the vehicle for propelling same, said pump having a shaft extending parallel to said longitudinal median plane and connected to said crankshaft by a force transmission element, said crankshaft having a central plane disposed out of the longitudinal median plane and to one side thereof, said pump being disposed on the opposite side of said longitudinal median plane and directly alongside said engine.

4,161,993

SAFETY-TYPE DASHBOARD CONTROL FOR CHOKE OR THE LIKE

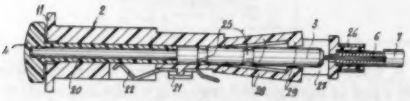
Alain Pitrat, Mours Saint-Eusebe, France, assignor to Societe Anonyme des Equipements S.E.I.M., Romans, France

Filed Oct. 3, 1977, Ser. No. 838,759

Claims priority, application France, Oct. 1, 1976, 76 30655

Int. Cl.[2] B60K *37/06*

U.S. Cl. 180—90 **10 Claims**



1. A control assembly for a controlled element displaceable longitudinally with respect to a support, said assembly comprising:

a guide secured to said support and defining a longitudinally extending guide passage, said guide having a laterally elastically deflectable finger having an abutment portion normally lying in said passage but laterally elastically deflectable out of said passage;

a longitudinally extending rod having a rear end connectable for joint longitudinal displacement with said controlled element and bearing longitudinally backwardly on said portion in an intermediate position and a front end, said rod being displaceable forwardly from said intermediate position away from said portion for adjustment of said controlled element and being displaceable backwardly from said intermediate position with lateral elastic deflection of said portion on forcible backward depression of said front end; and

a control knob on said front end spaced from said support in said intermediate position of said rod.

4,161,994

SPEED REGULATING DEVICE FOR MOTOR VEHICLES

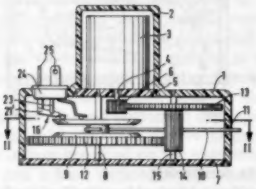
Harald Collonia, Königstein, Fed. Rep. of Germany, assignor to VDO Adolf Schindling AG, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 27, 1978, Ser. No. 881,679

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1977, 2709164

Int. Cl.[2] B60J *23/00*

U.S. Cl. 180—179 **6 Claims**



1. In a motor vehicle speed regulating device having an adjusting device with a movable setting element for connection to a throttle valve of an engine to adjust the air/fuel mixture and thereby adjust the speed of the engine, and an electrical regulator for comparing a reference signal representative of a desired speed and a signal representative of actual speed and detecting a deviation therebetween and producng a control signal dependent on the deviation, and connected with the setting element to cause movement of the setting element in response to a detected deviation, the improvement comprising variable impedance means carried by the setting element and including movable electrical contact means for producing a changed impedance dependent upon a changed position of the setting element and conducting the changed impedance to the electrical regulator, said variable impedance means including a lost motion means whereby the setting element must move a predetermined extent before a changed impedance is produced, thereby avoiding oscillation or hunting of the speed regulating device.

4,161,995

LOUDSPEAKER HOUSING FORMING A CLOSED, DAMPED SYSTEM, PARTICULARLY FOR AUTOMOTIVE INSTALLATION

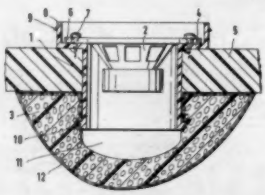
Gottfried Pohlmann, Schellerten, and Egon Schneider, Hildesheim, both of Fed. Rep. of Germany, assignors to Blaupunkt-Werke GmbH, Hildesheim, Fed. Rep. of Germany

Filed Aug. 8, 1977, Ser. No. 822,949

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1976, 2637487

Int. Cl.[2] H05K *5/00*; **G10K** *10/00*

U.S. Cl. 181—150 **19 Claims**



1. A vehicle loudspeaker housing for combination with and to receive and hold a loudspeaker, intended for installation on a panel, cover or the like formed with an opening therein comprising

two separate, connectable housing elements,

one element comprising a hollow open sleeve-like dimensionally and form stable essentially tubular element (**1, 1', 1''**), insertable and fitting in the opening of the panel (**5, 5', 5''**) having two open ends and dimensioned to laterally sourround the loudspeaker,

means located at one end of said tubular element extending laterally therefrom to overlap the panel;

means to attach said tubular element to the panel;

attachment means (**4, 8', 18''**) for the loudspeaker (**2, 2', 2''**), formed on said tubular element at one end thereof, the loudspeaker, upon attachment, closing off said one end,

and the second element comprising

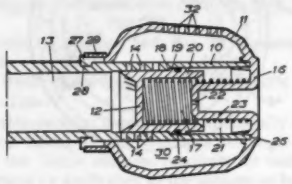
a housing body element (**3, 3', 3''**) having an essentially airtight covering and foamed plastic material located therein, engaged over the circumference of the outside of the hollow sleeve-like tubular element (**1, 1', 1''**) on the rear side of the panel (**5, 5', 5''**) at the other end thereof, said housing body element having a closed end section and forming a chamber (**11, 11'**) behind said hollow sleeve-like body; and

cooperating connecting means disposed at the rear side of the panel and towards the other end of the tubular element (**1, 1', 1''**) to firmly and essentially air-tightly secure the housing body element and the tubular element together to form a closed, damped system.

4,161,996
EXHAUST MUFFLER

Miroslav Dolejsi, Johanneshov, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Jan. 23, 1978, Ser. No. 871,393
Claims priority, application Sweden, Jan. 21, 1977, 7700621
Int. Cl.[2] F01N *1/20;* F16K *17/00*
U.S. Cl. 181—230 16 Claims

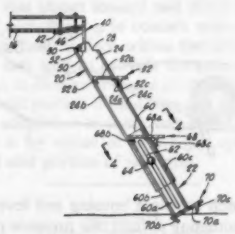


1. An exhaust muffler for pressure gas driven motors, comprising:
exhaust gas receiving means adapted to be coupled to an exhaust outlet of a pressure gas driven motor;
a variable flow restricting passage (14) coupled to said exhaust gas receiving means;
a spring biased valve body (12) in communication with said exhaust gas receiving means and with said variable flow restricting passage (14) and responsive to the actual exhaust gas pressure to maintain a constant pressure drop across the exhaust muffler by continuously adapting the area of said variable flow restricting passage (14) to the actual exhaust pressure; and
a vibration dampening means (21,22) associated with said valve body (12) for preventing resonance oscillation of said valve body, said vibration dampening means comprising a chamber (21) partly defined by said valve body (12); and a restriction opening (22) connecting said chamber (21) to the atmosphere.

4,161,997
SELF-STORING STEP STRUCTURE FOR VEHICULAR MOUNTING

Thomas W. Norman, 2817 NW. 64th St., Oklahoma City, Okla. 73112

Division of Ser. No. 578,155, May 16, 1975, Pat. No. 4,021,071.
This application Mar. 2, 1977, Ser. No. 773,522
Int. Cl.[2] E06C *5/04*
U.S. Cl. 182—93 3 Claims



1. A self-storing step structure comprising:
a first, upper step section including a pair of spaced rails of C-shaped cross-section;
means for pivotally connecting said first step section to a vehicle for pivotation about a horizontal axis between an operative position and a storing position;
an extensible, lower step section including a pair of spaced rails of C-shaped cross-section slidably registering with, and nesting within, the rails of said first step section, and having a step member extending between, and engaged with, the rails of said extensible step section, said step member comprising:
a step platform;
a rear web secured to said step platform along one edge thereof;
a forward web secured to said step platform along the second edge thereof and extending parallel to said rear web along the length of said step platform, said forward web being angled to the plane of said step platform and slidably resting upon the spaced rails of said first step section whereby weight imposed upon said step member is distributed in part to said first step section via said forward web and in part to said extensible step section via said step platform; and
means for adjustably interlocking said first step section with said extensible step section.

4,161,998
FIRE ESCAPE DEVICE

Richard C. Trimble, 1600 Gateway East #175, Richmond, Va. 23229

Filed Dec. 22, 1977, Ser. No. 863,422
Int. Cl.[2] E06C *1/36, 1/56;* A63B *7/04*
U.S. Cl. 182—190 9 Claims

1. A fire escape device designed to depend vertically from a building comprising in combination a thin elongated flexible rope-like support of uniform diameter having a multiplicity of beads with holes bored therethrough, each about 4 to 5 inches in diameter spaced along substantially the entire length of said support, supporting each other, and freely movable thereon, horizontal rods having a length about two times the diameter of said beads attached to said rope-like support above and below said beads on said support, and grasping hook means attached to at least one end of said support for attachment of said fire escape device to a supporting means on a building.

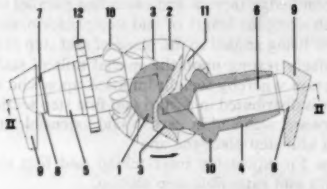
4,161,999
AUTOMATIC SLACK ADJUSTER

Sven E. Camph, Malmo, Sweden, assignor to Camph Engineering Company AB, Malmo, Sweden

Filed Dec. 12, 1977, Ser. No. 859,735
Claims priority, application Sweden, Dec. 27, 1976, 7614550
Int. Cl.[2] F16D *65/56*
U.S. Cl. 188—196 BA 3 Claims

1. An automatic slack adjuster for maintaining a predetermined slack in a brake force transmission comprising a key shaft carrying an angularly movable key flat arranged between two brake shoe engaging compression force transmitting elements adapted to be moved in the direction away from each other upon turning of said key flat during brake application, each of said compression force transmitting elements being designed as a key engaging sleeve part threaded on a brake shoe engaging bolt part, the parts of each element engaging said key being interconnected via a gear wheel journalled coaxially to said key shaft, a spring disc being provided to

engage a toothed surface on said sleeve to cause rotation of the interconnected parts of the said elements in case the angular movement of the key shaft exceeds a predetermined angle, characterised in that said spring engaged disc is designed as a spring mounted on the end surface of said key shaft adjacent to



said gear wheel, said spring carrying an axially protruding stop member adapted to resiliently engage said toothed surface and to slide on said toothed surface on one of said parts in case of relative angular displacement of the gear wheel and the force transmitting elements.

4,162,000

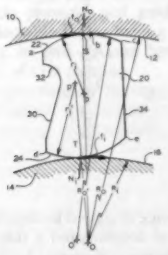
SPRAG FOR ONE-WAY CLUTCHES

Thaddeus F. Zlotek, Warren, Mich., assignor to Dana Corporation, Toledo, Ohio

Filed May 31, 1977, Ser. No. 801,816

Int. Cl.[2] F16D *41/07*

U.S. Cl. 192—41 A **3 Claims**



1. In a one-way clutch including an outer race having an inner surface and an inner race having an outer surface, the inner surface and the outer surface defining an annular space therebetween, a plurality of tiltable elements disposed circumferentially within the annular space adapted to connect the inner and outer races during relative rotation thereof in one direction and to permit relative rotation thereof in the opposite direction, said elements having camming surfaces being arcs having laterally spaced centers located within the profile of said elements and at least one of said camming surfaces having a portion formed on an arc of a radius with a center point outside the profile of said elements.

4,162,001

FREE RING SYNCHRONIZER HAVING OPPOSITELY ACTING SPRING MEANS

Kenneth B. Yant, Oregon, Ohio, assignor to Dana Corporation, Toledo, Ohio

Filed Nov. 16, 1977, Ser. No. 852,124

Int. Cl.[2] F16D *23/06*

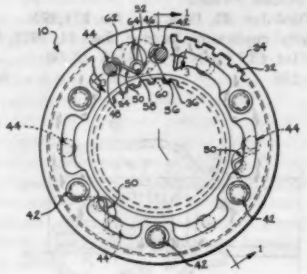
U.S. Cl. 192—53 E **6 Claims**

1. A synchronizing device comprising:

first and second axially spaced friction rings,

an axially shiftable coupling collar disposed between said friction rings, said coupling collar having spaced first and second openings and guide means located between said openings,

a pin fixed to and extending axially from each of said friction rings, each of said pins passing through one of said first and second openings,



a torsion spring disposed in said guide means having a coiled center section and oppositely directed leg portions radially extending from each end of said coiled center section and yieldingly engaging said pins.

4,162,002

FRICTION CLUTCH

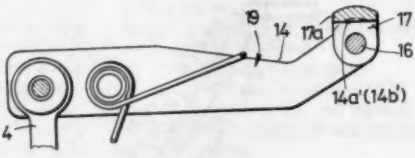
Oswald Dubiel, and Dieter Pretzel, both of Bühl, Fed. Rep. of Germany, assignors to LuK Lammen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed Sep. 27, 1977, Ser. No. 836,974

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1976, 2643863

Int. Cl.[2] F16D *23/00*

U.S. Cl. 192—99 A **18 Claims**



1. Friction clutch having a housing and levers mounted on the housing for actuating at least one pressure plate, the levers engaging the pressure plate through a connecting linkage, the levers being formed of at least two sheetmetal members and at least two connecting members firmly linking said sheetmetal members to one another, the levers being disposed radially to the housing and carrying, in vicinity of the inner radial end thereof and between said sheetmetal members thereat, a run-up member responsive to the action of an actuating member for actuating the pressure plate, said run-up member being of T-shaped construction including two beam parts overlapping end regions of said sheetmetal members.

4,162,003

READY-FOR-USE RAPID TEST PACKAGE FOR SEROLOGICAL TESTS

Dezső I. Bartos, Buchenweg, 5024 Pulheim, Fed. Rep. of Germany, and Jerzy Rybczynski, Kolding, Denmark, assignors to Dezso Istvan Bartos, Pulheim, Fed. Rep. of Germany

Continuation of Ser. No. 793,653, May 4, 1977, abandoned, which is a continuation of Ser. No. 693,801, Jun. 7, 1976, abandoned, which is a continuation of Ser. No. 483,659, Jun. 27, 1974, abandoned. This application Mar. 16, 1978, Ser. No. 888,041

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1973, 2333434

Int. Cl.[2] B65D *25/08;* F26B *5/04, 5/06;* G01N *31/00*

U.S. Cl. 206—219 4 Claims

1. A disposable package comprising a chemically inert transparent reaction vessel for performing a serological complement fixation test which contains reactants for said test comprising an antigen or antibodies to the antigen to be detected, hemolytic amboceptor and complement, said reactants being preserved in said vessel in frozen or freeze-dried form, each having been deep frozen or freeze-dried to form a separate layer or having been deep frozen or freeze-dried in separate areas of said vessel.

4,162,004

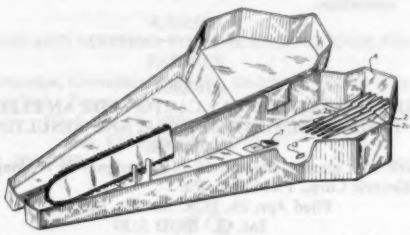
CARRYING CASE

William E. Thomas, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1977, Ser. No. 865,142

Int. Cl.[2] B65D *85/54;* A45C *11/26*

U.S. Cl. 206—349 17 Claims



1. A case adapted to receive and to store an object within it in a fixed position, thus preventing undesirable motion of that object in said case, which comprises in said case a stop, lug or block protruding from a wall of said case into its interior so positioned and adapted as to coact with a portion of said object that motion of that object toward said block is arrested when said portion of said object is in contact with a portion of said block, and an inclined surface within the interior of said case removed from said stop to provide between said surface and said stop a space to receive at least a portion of said object, said surface facing said portion of said stop and being otherwise so positioned and adapted as to coact with another portion of said object to urge it by virtue of its weight upon said inclined surface toward said portion of said stop.

4,162,005

ARTIST BRUSH BOX

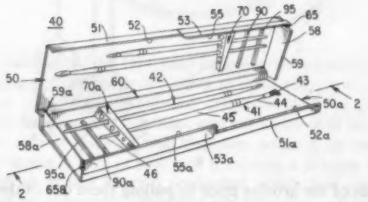
Harrison K. Linger, 7412 Springvale Dr., Louisville, Ky. 40222

Filed Dec. 12, 1977, Ser. No. 859,444

Int. Cl.[2] A46B *17/00;* B65D *77/26*

U.S. Cl. 206—362 10 Claims

1. A container for artist brushes having elongated tapered handles, said container comprising a pair of elongated panels hingedly interconnected along inner longitudinal edges thereof, two support members respectively disposed on said panels adjacent to opposite ends thereof and extending transversely thereof, each of said support members including two inclined walls spaced apart longitudinally of the corresponding panel and disposed at predetermined angles with respect thereto, said inclined walls of each said support member respectively having like-sized holes therethrough forming a pair of holes having the centers thereof lying along a common axis extending longitudinally of the corresponding panel substantially parallel thereto, each said pair of holes being adapted to receive therethrough a brush handle of a predetermined size until the peripheral edges of the holes of said pair of holes engage the handle firmly to hold it in place with the handle tip disposed at a predetermined location between the corresponding support member and the adjacent end of the corresponding panel, each of said panels including a first rail disposed thereon between said predetermined location and the adjacent end of said panel substantially parallel to the corresponding support member and extending a short distance above the lower ends of the corresponding pair of holes, each of said panels including a second rail disposed thereon between the corresponding first rail and the adjacent end of said panel substantially parallel to said first rail and extending thereabove, each of said first and second rails of each panel being engageable with a brush handle smaller than said predetermined size for elevating the handle and inclining it with respect to said axis to urge the handle into engagement with the peripheral edges of the corresponding pair of holes before the handle extends beyond the adjacent end of the corresponding panel, each of said panels having a side wall extending therefrom substantially normal thereto along the outer longitudinal edge thereof in the direction of the corresponding support member, each of said panels including an end wall extending therefrom substantially normal thereto adjacent to the end thereof nearest the corresponding support member in the direction of and above said side walls, said panels being hingedly movable between a substantially coplanar open configuration wherein associated brushes are insertable through the open ends of said panels and a closed configuration with one of said panels overlying the other substantially parallel thereto and cooperating with said side walls and said end walls to form a closed container, and latch means on said side walls for latching said panels in the closed configuration thereof, whereby different size handles can be held by each of said support members within the confines of said container.



4,162,006

MAGNETIC DISKETTE MAGAZINE

David R. Wilson, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,435

Int. Cl.[2] B65D *85/30*

U.S. Cl. 206—444 2 Claims

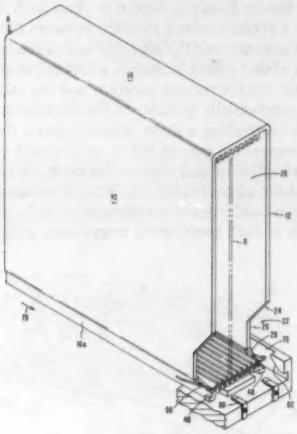
1. A magazine for containing a series of thin, flat, rectangular articles of a type subject to warpage and disposed in the magazine in vertical, spaced disposition comprising:

a magazine bottom, top panel and end panel effectively connected together and leaving the other end of the magazine open through which the articles may be withdrawn, and

a series of vertically aligned ribs within said magazine bottom and top panel extending longitudinally of said bottom

and top panel and providing pairs of vertically aligned grooves having parallel root portions so that the grooves may receive said articles and hold them vertical and spaced with respect to each other,

said grooves on said bottom being relatively narrow so as to accurately hold the bottom edges of said articles in spaced disposition so that a clothespin like picker device movable in a predetermined path close to and parallel with the bottom edges of said articles may reliably grip selected



ones of the articles prior to pulling them out of the magazine, said grooves within said magazine top panel being relatively wide in comparison with said grooves in said bottom and said end panel being plane, smooth and unribbed on its inside surface allowing warpage of said articles out of flatness with substantially no binding of said articles in the magazine to prevent their free movement out of the magazine through said open end of the magazine.

4,162,007

MAGAZINE-LID COMBINATION FOR JACKETED MAGNETIC DISKS

Maynard E. Bothun; Curtis A. Larson; Gayland E. Lightner, and David R. Wilson, all of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 20, 1978, Ser. No. 888,438
Int. Cl.[2] B65D *85/30, 43/12*
U.S. Cl. 206—444 **4 Claims**

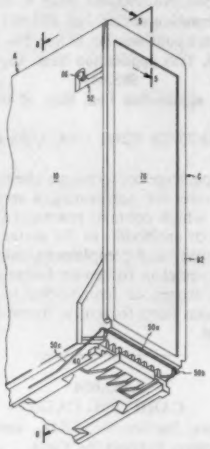
1. A container for disk assemblies each including a disk enclosed in a rectangular jacket, said container comprising:

a bottom, a top panel, an end panel and a pair of side panels that connect said top and end panels and said bottom and providing the container with an opposite end that is open when unlidded,

a lid for closing said open container end and completing the container when closing said open end,

a plurality of spaced aligned ribs on the inside surface of said lid and said top panel and said bottom for holding the disk assemblies in the container in spaced relation with respect to each other, and

a pivotal connection of said lid on said container including a pair of aligned L-shaped notches formed in said side panels and a pair of pins provided on said lid, said L-shaped notches being disposed adjacent said top panel and remote from said bottom and including initial notch portions extending from said open end of the container and parallel with said bottom and toward said end panel and ultimate notch portions in communication with said initial notch portions and extending parallel with said end panel and toward said top panel, said pins being provided adjacent an end of said lid and entering said initial notch portions with translatory movement of said lid to partially close said open end of the container with the ends of the ribs on the inside surface of said lid interleaving with translatory motion with said disk assemblies in the grooves between said ribs of said bottom and top panel and said lid swinging



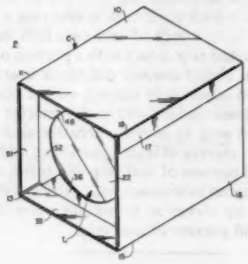
shut on the open end of said container when said pins move upwardly in said ultimate notch portions so as to fully close said open container end and bring the ribs of the lid into full interleaving relationship with said disk assemblies.

4,162,008

SHIPPING AND DISPLAY CARTON FOR AN ELECTRIC LAMP OR SIMILAR ARTICLE, AND RESULTING PACKAGE

David McCalmont, Bloomfield, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Apr. 28, 1978, Ser. No. 900,944
Int. Cl.[2] B65D *5/50*
U.S. Cl. 206—590 **8 Claims**



1. In a paperboard shipping and display carton for a fragile article of a type which has an end portion that is susceptible to damage by abrasion at regions where it contacts the carton, the combination comprising;

a plurality of connected walls which define a collapsible tubular sleeve,

a tabular member depending from each of the respective walls and held in inturned relationship with the carton by a segment which is secured to the inner surface of the associated wall, said tabular members being disposed at

the same end of the carton and each having an unattached end segment, and

means coupling the unattached end segments of adjacent tabular members in paired foldable relationship in a manner such that the end segments are automatically pulled into upstanding position by the respective walls when the collapsed carton is erected into tubular form and said end segments then constitute inwardly-projecting flanges which extend along the periphery of the carton and are adapted to engage the end portion of an article that is inserted into the carton and thus retain the article in place while exposing a part of it to view,

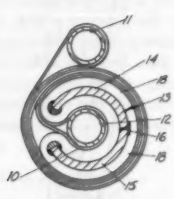
the unattached end segment of one of said tabular members being larger than the others and being so shaped and articulated that it constitutes an article-protective panel that lies flat within the carton, when the carton is in collapsed condition, and is pulled into upstanding position along with the unattached end segments of the other tabular members, when the carton is erected, and is thereby automatically positioned behind and in overlying relationship with each of the upstanding end segments of the other tabular members and thus constitutes a smooth continuous pad for the end face of an inserted article which shields the end face from the abrasive action of the laterally protruding end edges of said end segments of the tabular members.

4,162,009

MEANS AND METHOD FOR PACKAGING ENDLESS FABRICS

Peter Schouten, Grovedale, Australia, assignor to Huyck Corporation, Wake Forest, N.C.

Filed Apr. 10, 1978, Ser. No. 894,995
Int. Cl.[2] B65D *85/02, 85/672*
U.S. Cl. 206—389 10 Claims



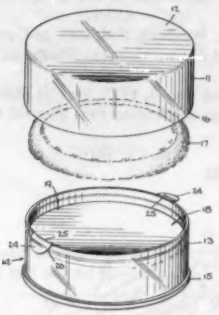
1. A package for endless papermaking fabrics, said package comprising an elongated endless fabric, a pair of inner cores inserted in said endless fabric at its opposite extremities, an outer core surrounding a first of said inner cores and the portion of the fabric extending around said inner core, said outer core comprising a pair of opposing semi-cylindrical sections, means hingedly connecting said sections together along a mating pair of their side edges, the opposite side edges of the sections being spaced apart to define a longitudinal slot through which the fabric projects, a layer of cushioning material interposed between the inner surface of said outer core and the fabric surrounding the first of said inner cores, the remainder of the fabric extending outwardly beyond said longitudinal slot being wound on said outer core, means extending along at least one edge of said slot acting to increase the angle of wrap of the fabric wound around said outer core, the other of said inner cores being juxtaposed to the rolled fabric, and means securing said cores together to form a package.

4,162,010

COSMETIC DUSTING POWDER CONTAINER

Charles J. Hovsepian, West Caldwell, N.J., assignor to Packaging Systems Corporation, Pearl River, N.Y.

Filed Feb. 27, 1978, Ser. No. 881,539
Int. Cl.[2] B65D *51/18, 11/20*
U.S. Cl. 206—823 9 Claims



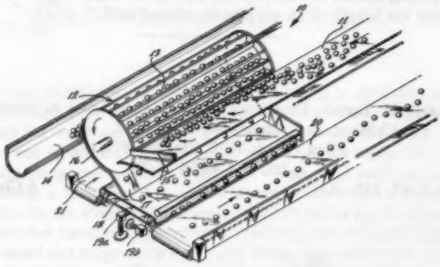
1. A container of the type used for cosmetic dusting powder comprising a container body having an upstanding wall, and an insert for placement within said container body to prevent escape of the container contents, said container wall having at least one area of reduced wall thickness defining an inwardly opening recess at a lip of said wall providing a passage for the escape of air as said insert is positioned within said container body and an outwardly projecting rib extending substantially around the periphery of said insert for closing said at least one passage to seal said container when said insert is fully inserted.

4,162,011

APPARATUS FOR SORTING FRUITS AND VEGETABLES

Richard L. Beach, Danville, Calif., assignor to Hunt-Wesson Foods, Inc., Fullerton, Calif.

Filed Oct. 18, 1976, Ser. No. 733,397
Int. Cl.[2] B07C *5/00*
U.S. Cl. 209—637 12 Claims



10. Apparatus for sorting firm whole specimens of fruit and vegetables from soft broken specimens comprising:

means for amplifying rolling momentum and velocity of specimens to be sorted;

generally horizontal conveyor means having a resilient surface for receiving specimens to which amplified rolling momentum and velocity is imparted;

said means for amplifying rolling momentum and velocity of specimens being structured to deposit generally simultaneously a plurality of specimens to be sorted onto said resilient surface wherein specimens being sorted are cleared off the area of the resilient surface underlying a point of deposit of specimens before an additional plurality of specimens is deposited on said moving conveyor;

said resilient surface imparting a trampoline effect to firm specimens transported by said conveyor means;

said trampoline effect imparted enabling sorting of firm whole specimens from soft broken specimens; and,

means for separately collecting the sorted specimens.

4,162,012

DEVICE FOR ASSORTING INADEQUATELY WOUND COILS

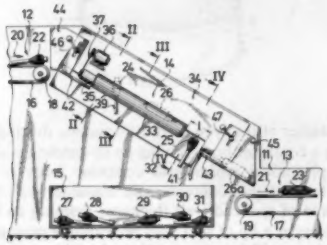
Wilhelm Küpper, Wegberg, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Mönchen-Gladbach, Fed. Rep. of Germany

Filed Dec. 7, 1977, Ser. No. 858,385

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1976, 2655561

Int. Cl.[2] B07C *5/12*

U.S. Cl. 209—662 **4 Claims**



1. Device for separating-out inadequately wound coils from coils conveyed individually and serially by at least one of an horizontal and inclined conveyor in direction of the longitudinal axis of the coils comprising means defining at least one coil support surface for the coils disposed at a section of the conveyor, said support surface being formed with at least one sorting opening widening in conveyance direction of the conveyor, said sorting opening having a starting width greater than the diameter of the coil cores but smaller than the diameter of an adequately wound coil, said sorting opening in said conveyance direction widening to an opening section having a width greater than that of the coil diameter, said widened opening section of said sorting opening having a length shorter than the length of an adequately wound coil.

4,162,013

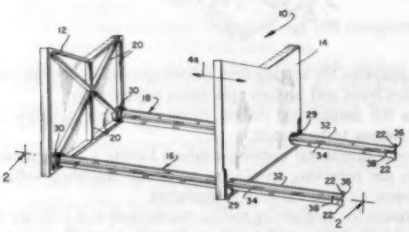
BOOK RACK

Larry H. Tucker, Engelwood Cliffs, N.J., assignor to Concepts For Children, Inc., Englewood Cliffs, N.J.

Filed Feb. 6, 1978, Ser. No. 875,340

Int. Cl.[2] A47B *65/00*

U.S. Cl. 211—43 **6 Claims**



1. An adjustable rack assembly for books or like items comprising first and second supports alignable in parallel spaced relationship; and corresponding first and second end plaques removably mountable on first and second supports, respectively; said first and second end plaques being mountable on each of said first and second supports each extending substantially normal to a plane through said first and second supports; each of said first and second end plaques comprising a substantially planar plastic web having first and second major planar surfaces, each in a plane substantially parallel to its respective web, and each web including corresponding first and second channel members having respective first and second channels therein, said first and second supports being introduceable into said channels for mounting each of said first and second end plaques on said first and second supports; said first and second supports including first means cooperable with said first and second channel members on said first and second end plaques for releasably engaging opposite ends of said first and second supports, respectively, to said first and second end plaques, said means comprising respective discrete pairs of resilient legs mounted on each end of each of said first and second supports, and corresponding pairs of feet emergent from said legs, said feet being aligned and emergent at relative normals to said legs, each of said discrete pairs of legs having a slot defined therebetween, said respective feet of each discrete pair having a distance therebetween which exceeds the height of each of said channels, said respective discrete pairs of legs having a flex characteristic under a linearly applied pressure for introduction of said discrete pairs of resilient legs through a respective channel in said end plaques, each of said feet having a cammed surface corresponding to a cam profile of said channel; and said first and second supports including second means cooperable with said first means for fixing the position of said first end plaque on said first and second supports, said second end plaque being slidable on said first and second supports and telescopable thereon relative to said first end plaque.

4,162,014

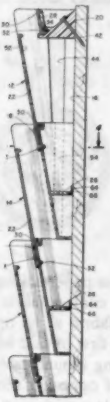
VERTICAL FILE CONSTRUCTION

Mitchell Bobrick, Los Angeles, Calif., assignor to Eldon Industries, Inc., Hawthorne, Calif.

Filed May 16, 1977, Ser. No. 797,335

Int. Cl.[2] A47F *7/00*

U.S. Cl. 211—50 **7 Claims**



1. In a vertical letter file adapted to be mounted on a supporting surface, the combination of: a primary tray member having parallel sidewalls, a front wall and a bottom wall, support means on the uppermost extremity of said sidewalls for mounting said tray on said supporting surface, and detent means on said sidewalls; and a secondary tray member having parallel sidewalls, a front wall and a bottom wall connected to said sidewalls and detent means on said sidewalls engageable with the detent means on said primary tray member, said detent means on said sidewalls of said secondary tray member being displaceable by said primary tray member and engage-

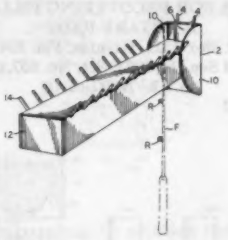
able with the detent means thereof by springing into engagement therewith.

4,162,015

DISPLAY FOR FISHING RODS

Bill J. Hodges, deceased, late of Atoka, Okla. (by Bernice G. Hodges, executrix), assignor to Lawrence Peska Associates, Inc., New York, N.Y., a part interest

Filed Jun. 22, 1977, Ser. No. 808,827
Int. Cl.[2] A47F 5/00
U.S. Cl. 211—87 2 Claims



1. A display for fishing rods, said display comprising a mounting member, a plurality of support hook means extending upwardly from said mounting member rearwardly thereof and again upwardly to facilitate engagement with a pegboard, stabilizing hook means extending from said mounting member and adapted to engage said pegboard, a rigid base member extending outwardly from and substantially normal to said mounting member, said mounting member being provided with wing portions estending forwardly, one wing portion disposed on either side of said base member, said wing portions being in contact with said base member sustantially the entire forwardly extending length of said wing portion, said base member comprising an elongated hollow box-like member, the sides of said box-like member being substantially parallel to the force of gravity, a first row of thin elongated projections extending outwardly and upwardly from a first upper corner of said box-like member, and a second row of thin elongated projections extending outwardly and upwardly from a second upper corner of said box-like member, said projections being adapted to slidingly receive a fishing line guide ring of a fishing rod, said first and second rows of projections extending from opposite sides of said base member and extending in directions away from each other.

4,162,016

ARTICLE STACKER WITH OVERHEAD FINGER RAKE

Robert A. Schmitt, Vancouver, Wash., assignor to Columbia Machine, Inc., Vancouver, Wash.

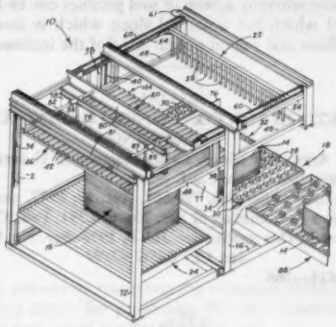
Filed Apr. 3, 1978, Ser. No. 893,004
Int. Cl.[2] B65G 57/10
U.S. Cl. 414—85 5 Claims

1. Article stacking apparatus comprising

a layer-arranging table, the upper surface of which is formed by a plurality of laterally-spaced article support members defining channels therebetween,

a transfer carriage horizontally adjacent said layer-arranging table, the upper surface of said carriage being formed by a plurality of laterally-spaced elongate slats defining channels therebetween, and

an overhead rake horizontally shiftable between a first position overlying said layer arranging table, and a second position overlying said transfer carriage, said rake including a plurality of laterally-spaced tines having downwardly projecting ends which are positioned to extend into said channels of said layer-arranging table and said



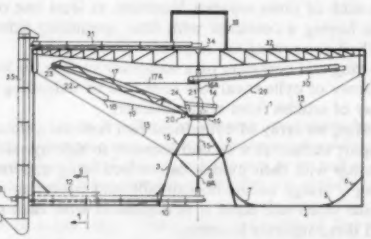
transfer carriage as said rake is shifted horizontally between its first and second positions.

4,162,017

GRANULAR OR PULVERULENT PRODUCT STORING AND HANDLING INSTALLATION

Gustave M. Noyon, Paris, France, assignor to Societe Internationale d'Investissements et de Participations par abreviation INTERPAR, Paris, France

Filed Jan. 10, 1977, Ser. No. 760,769
Claims priority, application France, Jan. 13, 1976, 76 00674
Int. Cl.[2] B65G 47/00
U.S. Cl. 414—313 20 Claims



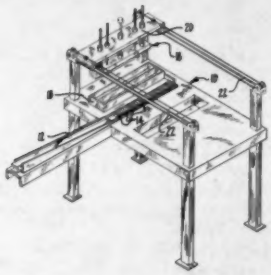
1. An installation for storing and handling a granular or pulverulent product, comprising a store, a vessel located within the store and for storing the product and comprising a floor and upwardly extending wall means joined to the floor for retaining said product inside the vessel, said wall means including a wall which is upwardly and outwardly inclined relative to the interior of the vessel and defines an upper edge, at least one handling apparatus for extracting the product from the vessel and comprising a movable frame located outside the vessel adjacent said inclined wall, a rigid boom which is mounted on the frame to be movable relative to the vessel so that an end of the boom remote from said frame is movable in a path which is adjacent a region of the vessel laterally remote from the inclined wall and is higher than said edge, a dragline including a raking scoop and movably mounted on the boom so that the scoop is movable between a first position in which the scoop is adjacent said edge of said inclined wall and a second position in which the scoop is adjacent said end of the boom remote from the frame, means for shifting the dragline and scoop in an active scooping direction from said second position to said first position of the scoop to cause said product to pour over said edge of the inclined wall for reception by product discharge means and means for shifting the dragline and scoop in a return direction from said first position to said

second position, and means for pouring said product into the vessel and located in said region and positioned higher than said edge of the inclined wall and adjacent said path of said end of the boom whereby a heap of said product can be formed in the vessel which has a natural slope which is downwardly inclined from said region to said edge of the inclined wall.

4,162,018
METHOD FOR CONTAINER LOADING AND UNLOADING

Satya P. Arya, San Diego, Calif., assignor to General Atomic Company, San Diego, Calif.

Continuation of Ser. No. 790,588, Apr. 25, 1977, abandoned, which is a continuation of Ser. No. 658,391, Feb. 17, 1976, abandoned. This application Jul. 6, 1978, Ser. No. 922,438
Int. Cl.[2] B65G *47/91*
U.S. Cl. 414—786 **3 Claims**



1. A method of loading or unloading elongated cylindrical radioactive nuclear fuel rods disposed in side-to-side relation to or from each of three separate locations, at least one of said locations having a container with four upstanding sidewalls, said method comprising the steps of:

supporting said container on a stationary surface for loading an array of cylindrical fuel rods into or unloading of an array of articles from said container,

supporting an array of cylindrical fuel rods on a stationary support surface at a second location in side-by-side relationship with their cylindrical surface being uppermost,

shifting a bridge means horizontally and operating switch means when said hand is in alignment with each one of said three separate locations,

after operating a switch indicating alignment with said first location, lowering a transfer hand having a plurality of suction surfaces for holding the cylindrical surfaces of said fuel rods in an array and in side-by-side relation within an open space defined by said four upstanding walls of said container,

operating a switching means to stop further downward movement of said transfer hand when said transfer hand and array are located at the proper height in said container depending upon the number of layers in said container,

decreasing the vacuum in said transfer hand to release said nuclear fuel rods in said container when loading fuel rods in said container, providing a vacuum sufficient to grip cylindrical surfaces of array of said nuclear fuel rods in said container when unloading said container,

raising said transfer hand from said container and above said upstanding side walls of said container,

moving said bridge means in the reverse direction to a position associated with a further switch means associated with said second location,

lowering said transfer hand toward said support surface and decreasing said vacuum in said transfer hand means to deposit an array of side-by-side fuel rods at said support surface when depositing fuel rods at said second location, increasing said vacuum in said transfer hand to lift an array of fuel rods from said support surface when removing fuel rods therefrom,

shifting said bridge means to said third location to operate a third switch means indicating alignment of said bridge means with said third location,

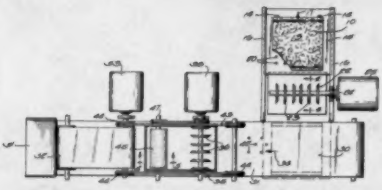
lowering said transfer hand and increasing said vacuum in said hand to remove an array of fuel rods at said third location, decreasing said vacuum to deposit an array fuel rods at said third location, and

raising said transfer hand and moving said bridge means to either said first or second locations.

4,162,019
APPARATUS FOR RECOVERING FILLER FROM SANITARY PADS

Curt G. Joa, P.O. Box 1121, Boynton, Fla. 33435

Filed Sep. 28, 1977, Ser. No. 837,125
Int. Cl.[2] B65G *65/04*
U.S. Cl. 414—412 **7 Claims**



1. Apparatus for recovering filler from a sanitary pad having a film backing and a cover sheet, said apparatus comprising:

a movable tray on which the pad can be laid out flat,

a cutter to which the movable tray will advance the pad to cut open the cover sheet to expose the filler,

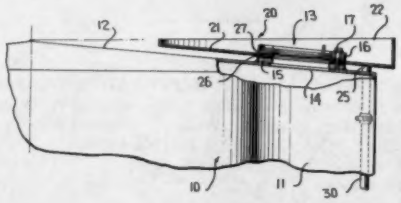
means for sucking the filler and the cut cover sheet from the film backing for salvage, and

means for disposing of the film backing.

4,162,020
ANTI-SPILL DEVICE

Edward O. Kirkland, Riverton, Wyo., assignor to Donald K. Smith, Sterling, Colo.

Filed Jun. 3, 1977, Ser. No. 803,277
Int. Cl.[2] B65D *25/20, 25/56*
U.S. Cl. 220—1 B **6 Claims**



1. A storage tank assembly comprising a storage tank having a roof and an upstanding wall, and a hatch with an openable cover carried by said roof adjacent an edge of said roof, said hatch and said roof having mating mounting flanges, and an anti-spill device associated with said hatch for collecting spillage through said hatch, said anti-spill device including a pan having a bottom wall interposed between said hatch mounting flange and said roof mounting flange, said bottom wall of said pan having an access opening therethrough aligned with said hatch and an upstanding peripheral wall, and drain means connected to said pan.

4,162,021

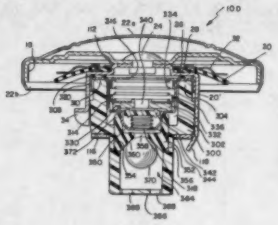
PRESSURE-VACUUM RELIEF FUEL TANK CAP WITH ROLL-OVER SAFETY VALVE FEATURE

Billy G. Crute, Connersville, Ind., assignor to Stant Manufacturing Company, Inc., Connersville, Ind.

Continuation-in-part of Ser. No. 548,035, Feb. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 510,483, Sep. 30, 1974, Pat. No. 3,938,692. This application Sep. 26, 1975, Ser. No. 616,960

Int. Cl.[2] B65D *51/16*

U.S. Cl. 220—202 5 Claims



4. A pressure-vacuum cap for a vehicle fuel tank having a normally upwardly extending filler neck formed with a peripherally and radially extending sealing surface concentric with the longitudinal axis of said neck, said cap comprising a cover, a valve body providing a centrally disposed passageway extending axially therethrough concentric with and in communication with said filler neck, means for connecting said valve body to said cover so that said valve body extends axially downwardly into said filler neck, said valve body and its passageway having an axially upper end portion and an axially lower end portion, pressure-vacuum valve means disposed in the upper end portion of said passageway for normalizing the pressure in such a tank, venting the tank to atmosphere when the pressure in the tank exceeds a predetermined superatmospheric level and when the pressure in the tank drops below a predetermined subatmospheric level, said valve means including an axially downwardly projecting, generally concentric shell portion having a central vent opening therein, in which the improvement comprises a rubber-like insert disposed in the lower portion of said passageway and sealably engaging said shell portion about said vent opening, said insert having a venting passageway extending axially therethrough in communication with said vent opening, said insert being formed to have an axially downwardly facing concentric valve seat about its said venting passageway, and a ball disposed in the lower portion of said valve body passageway to move into closing engagement with said valve seat.

4,162,022

CLOSURER AND METHOD FOR SEALING A FLOATING TANK ROOF

William M. Fox, 5735 Alhambra Ave., Martinez, Calif. 94553

Filed Jun. 5, 1978, Ser. No. 912,259

Int. Cl.[2] B65D *87/18, 87/20*

U.S. Cl. 220—224 8 Claims

1. A tank roof seal disposable about the periphery of a tank roof floating on a fluid contained in a tank comprising:

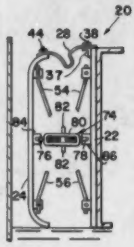
a bracket;

means for securing the bracket to the tank roof;

a shoe positionable against the tank;

means for resiliently mounting the shoe to the bracket;

means for providing a seal between the shoe and the bracket, said seal means being flexible;



means for selectively restricting the extension of the resilient mounting means for positioning the shoe relative to the bracket and out of contact with the tank.

4,162,023

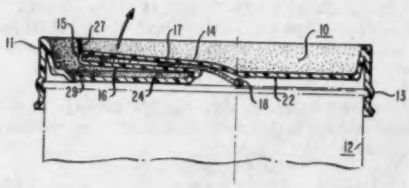
DUST COVER FOR FLIP TOP OPENING CONTAINERS

Heinz J. Faltermeier, 2236 Washington Valley Rd., Martinsville, N.J. 08836

Filed Oct. 23, 1978, Ser. No. 953,648

Int. Cl.[2] B65D *51/22*

U.S. Cl. 220—258 7 Claims



1. A dust cover for flip-top opening containers having a pull-tab comprising a skirt member consisting of a substantially flat narrow band of plastic material joined at its end to form a ring; and a multi-layered substantially flat-top surface member having a first top layer contiguously joined along a majority of its edge to a top edge of said ring and forming free unconnected edge; a second layer contiguous with said top layer joined along said free edge and folded thereunder retaining between said top layer and said second layer said pull-tab to form a multi-layer retention member.

4,162,024

CONTAINER HAVING SLIDEABLE CLOSURE MEANS

John P. Shanley, 311 N. Dunton Ave., Arlington Heights, Ill. 60004

Filed May 25, 1978, Ser. No. 909,549

Int. Cl.[2] B65D *43/20*

U.S. Cl. 220—350 15 Claims

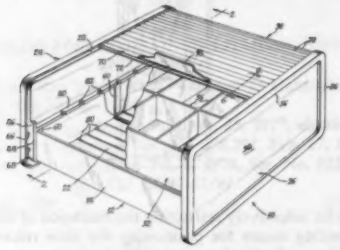
1. A storage container comprising:

an integrally formed tray portion having bottom, front and rear walls and opposed side walls;

side panels attached to the side walls of said tray, said side panels having an inwardly extending horizontal flange means located generally intermediate the top and bottom thereof, said panels having generally vertical flanges located along the front and rear thereof, said horizontal flanges being located closely adjacent the top of the respective side walls of said tray and said vertical flanges being located closely adjacent said front and rear walls of said tray so that the sides of said tray fit within said horizontal vertical flanges;

each of said side panels having a channel along a substantial portion of the periphery thereof, said channels being opposed to one another and adapted to receive a sliding closure member therebetween;

a closure member fitting in the channel of said opposite side panels, said member being generally rigid in the direction



between said channels and flexible in the transverse direction so that said member is slideable in said channels and can be moved around the corners thereof to thereby open and close the container, said closure member being dimensioned so as to extend generally around approximately one half of the periphery of said container.

4,162,025

APPARATUS FOR UNREELING VALVED SACKS WHICH ARE REELED IN OVERLAPPING FORMATION

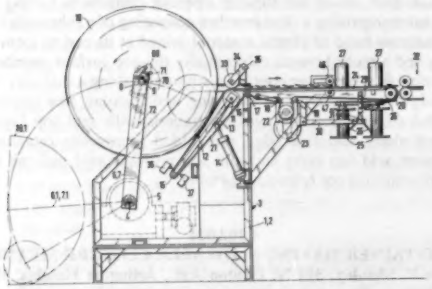
Fritz Achelpohl; Konrad Tetenborg, and Richard Feldkämper, all of Lengerich of Westphalia, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich of Westphalia, Fed. Rep. of Germany

Filed Dec. 14, 1977, Ser. No. 860,633

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1976, 2658294

Int. Cl.[2] B65H *5/28*

U.S. Cl. 221—72 **7 Claims**



1. Apparatus for separating valved sacks stored in overlapping formation and held on reels by holding bands, the separated sacks being supplied to filling machines, said apparatus comprising a stand in which pivotable arms with bearings for receiving the reel are mounted, a frame which can be applied to the reel and carries at opposite ends rollers over which there pass driven endless belts pressing on the reel periphery to drive the reel, means for applying said frame to the reel, spools for coiling holding bands that are pulled off together with the unreeled overlapping sacks, conveyor means which are disposed downstream of the reel-driving belts, move at a higher speed and pull the sacks individually from the overlapping formation, roller means for pressing the overlapping sack formation against the endless belts and disposed at a spacing of no more than about one length of the sacks to be unreeled from the point where the overlapping sacks are just being lifted off the reel, and limiting switches mounted on said stand on opposite sides of one end of the frame carrying the rollers, the switching positions of the limiting switches being disposed in planes which keep the applying motion of said means for applying said frame within close limits.

4,162,026

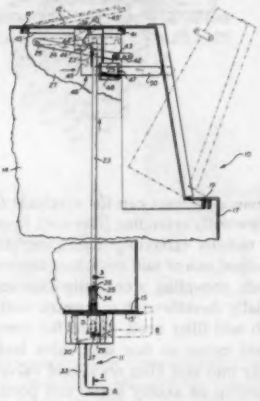
INTERLOCK MECHANISM

Philip F. Jacobs; Evelyn Friedman, and Peter Southall, all of Whitehall, N.Y., assignors to E. B. Metal & Rubber Industries, Inc., Whitehall, N.Y.

Filed Jun. 13, 1977, Ser. No. 806,308

Int. Cl.[2] G07F *11/02*

U.S. Cl. 221—92 **18 Claims**



1. A mechanism for use with first and second separate units each having a movable part movable between open and closed positions to respectively permit and prevent access to the interior of the units, said mechanism comprising elongate means supported at one of its ends in one of the units for movement between first and second positions and having an opposite end portion extending into the other unit, means in said other unit operatively connected to said opposite end portion of the elongate means for moving the latter between its first and second positions, said moving means including a manually operated element positioned wholly within the confines of the other unit upon moving the elongate means to one of its positions and extending exteriorly of said other unit upon moving the elongate means to its other position, said element, in one of its positions, preventing movement ot the movable part of the other unit to its closed position until said elongate means is moved to its said one position thereof in which it is adapted to hold the movable part of said one of said units in locked position.

4,162,027

REMOTE READOUT DEVICE FOR A PUMP

Warren L. Howard, Mansfield, and Eugene E. Dorcas, Colleyville, both of Tex., assignors to Datacon, Inc., Arlington, Tex.

Filed Jan. 24, 1978, Ser. No. 871,812

Int. Cl.[2] B67D *5/04*

U.S. Cl. 222—23 **8 Claims**

1. In a pumping device for pumping flammable liquids, measuring the quantity of liquid transferred, and electrically relaying from within the explosive environment of the pumping device to a remote location information as to the quantity of liquid transferred, the improvement which comprises:

a. a photo-emitter disposed within the explosive environment of the pumping device;

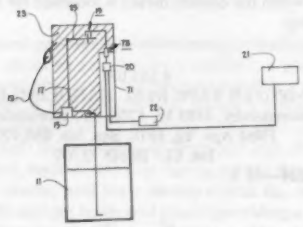
b. a photo-receptor disposed within the explosive environ-

ment in an orientation such that the emission from said photo-emitter is receivable by said photo-receptor;

c. a blocking means for intermittently blocking the emission pathway between said photo-emitter and said photo-receptor, said blocking means being connected to mechanical parts of the pumping device such that each blockage of the emission pathway corresponds to a certain quantity of liquid having been pumped;

d. a first pair of resistors, the left lead of one connected to the input of said photo-emitter and the left lead of the other connected to the output of said photo-emitter; each of said resistors having sufficient resistance to prevent a spark from occurring when a high potential is applied to the right lead of each resistor and the left leads are short circuited or grounded;

e. a second pair of resistors, the left lead of one connected to the input of said photo-receptor and the left lead of the other connected to the output of said photo-receptor; each of said second pair of resistors having sufficient resistance to prevent a spark from occurring when a high potential is applied to the right lead of each resistor and the left leads are short circuited or grounded;



f. a first power means for supplying a potential difference across the right leads of said first pair of resistors; said first power means being disposed outside of the explosive environment;

g. a second power means for supplying a potential difference across the right leads of said second pair of resistors; said second power means being disposed outside of the explosive environment;

h. container means for sealingly containing said first pair of resistors and said second pair of resistors; said container means being disposed across the periphery of the explosive environment such that the left leads of said first pair of resistors and said second pair of resistors extend from said container means into the explosive environment, and the right leads of said first pair of resistors and said second pair of resistors extend from said container means outside of the explosive environment; and

i. means for transferring the pulses produced by said photo-receptor to the remote location, said transferring means being connected to the right leads of said second pair of resistors and disposed outside of the explosive environment of the pumping device.

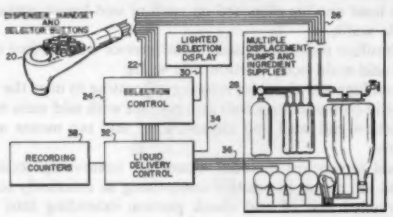
4,162,028

BEVERAGE DISPENSING SYSTEM

Arthur M. Reichenberger, 1916 N. 21st Pl., Phoenix, Ariz. 85006

Filed Feb. 11, 1977, Ser. No. 767,772
Int. Cl.[2] B67D *5/06*
U.S. Cl. 222—129.4 **11 Claims**

1. A beverage dispenser comprising a movable dispenser handset; a plurality of flexible liquid delivery conduits coupled to said dispenser handset for delivering liquid beverage ingredients thereto; a plurality of liquid delivery means for displacing liquid under pressure, comprising a normal mode group of said liquid delivery means and at least one alternate mode group of said liquid delivery means, each of said liquid delivery means coupled respectively to said liquid delivery conduits; a plurality of liquid ingredient supplies coupled respectively to said liquid delivery means; said dispenser handset having control switches and a plurality of selection switches; an electronic control means coupled in circuit with said control switches and said selection switches; said control means coupled in circuit with said liquid delivery means; said control means being responsive to the manual actuation of any one of said selection switches to energize a respective liquid delivery means from said normal mode group to cause the flow of liquid through respective conduits and said dispenser handset; a mode selector means in said control means for changing the functional con-



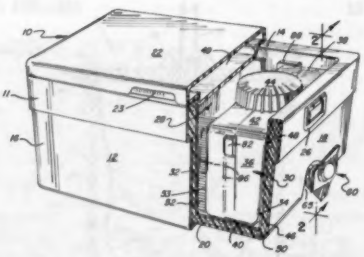
nections of said selection switches to the alternate mode group of said liquid delivery means when energized by actuation of one of said control switches; said control means having the functional connections of said selector switches changed to said alternate mode group, being responsive to manual actuation of any one of said selection switches to energize said respective liquid delivery means from said alternate mode group to cause the flow of liquid through respective conduits and said dispenser handset; said mode selector means being responsive to the manual actuation of any selection switch to change the functional connections of said selection switches back to the normal mode group of said liquid delivery means.

4,162,029

COOLER CHEST/LIQUID DISPENSER COMBINATION

Marten Gottsegen, 1212 Lake Shore Dr., Chicago, Ill. 60610, and Howard L. Esch, 6161 SW. 123 Ter., Miami, Fla. 33156

Filed Aug. 3, 1977, Ser. No. 821,619
Int. Cl.[2] B67D *5/62*
U.S. Cl. 222—131 **7 Claims**



1. A cooler chest and beverage container combination comprising:

(a) a main body portion having a pair of upstanding insulated side walls, a pair of upstanding insulated end walls, and an insulated bottom wall defining an interior chamber having interior wall surfaces;

(b) a lid closure for the top of said body portion;

(c) a removable liquid container disposed in said interior chamber, said liquid container comprising: a first and a second spaced apart end wall, a pair of spaced apart side walls joining said end walls, a bottom wall, and a top wall,

together defining in interior space, said top wall includes an opening of sufficient size to permit removal of said tap means;

(d) said first one of said liquid container end walls being disposed in contact with at least portions of the inner surface of a first one of said upstanding insulated end walls of said main body portion;

(e) an exterior tap means having an open shank portion extending through apertures in said first body portion end wall and said first liquid container end wall adjacent the bottom walls into said interior space of said liquid container to withdraw liquid therefrom upon actuation of said tap means from the exterior without removal of said liquid container or opening of said lid closure;

(f) at least one lug disposed on each of said liquid container side walls;

(g) shoulder means disposed on the interior wall surface each of said main body portion side walls;

(h) said lugs and shoulder means cooperating to urge the first liquid container end wall into contact with said main body portion end wall and alignment of said tap means apertures;

(i) said tap means includes means for removably securing said tap means in position comprising an exteriorly screw threaded end of said shank portion extending into said interior space, a nut threadable thereon, sealing means disposed around said liquid container aperture, and an exterior annular flange formed integral with said tap means, so that said nut sealingly compresses together said seal, said first liquid container end wall, and said first main body portion end wall; and

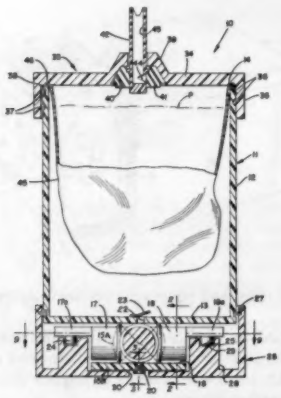
(j) said insulated end walls of said main body portion comprise an outer shell spaced from an inner liner and having insulation means therebetween, and said outer shell is recessed in the area of said tap means so that said outer shell and said liner are in substantial contact in the area of said tap means annular flange.

4,162,030

DISPOSABLE PACKAGE DISPENSER HAVING A PRESSURE RELEASE CHANNEL

Nicholas G. Capra, East Hanover, N.J., and Ronald L. Antenore, Coral Gables, Fla., assignors to J. Claybrook Lewis and Associates, Ltd.

Filed Apr. 20, 1977, Ser. No. 789,552
Int. Cl.[2] B05B *11/02*
U.S. Cl. 222—321 **14 Claims**



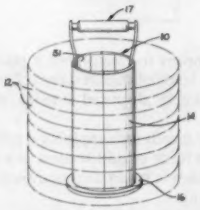
1. A reuseable, pressurizable, dispensing container comprising: a housing having a side wall with an open end and a closed end and defining a pressurization chamber therewithin; expansible chamber means at the closed end and connected with the pressurization chamber to pressurize the chamber; manually operable means connected with the expansible chamber means to operate the expansible chamber means; closure means on the open end of the container releasably attaching a dispensing package thereto having a collapsible product containing member received in the pressurization chamber of the container, whereby the contents of the collapsible member may be pressurized for dispensing as desired, said closure means having attaching means thereon cooperating with complementary attaching means on the housing to releasably secure the closure means to the housing open end, said closure means normally effecting an air-tight seal with said housing open end to prevent loss of pressure from the pressurization chamber; product discharge means on the package for selectively discharging product from the package under pressure when the interior of the housing is pressurized upon manipulation of the expansible chamber means; and a pressure release channel formed through and extending angularly across the attaching means and establishing fluid communication between the pressurization chamber and the atmosphere to release pressure from the pressurization chamber upon initial opening movement of the closure means, to prevent forcible displacement of the closure means from the housing by pressure in the pressurization chamber when the closure means is loosened for removal from the housing.

4,162,031

COMPUTER TAPE REEL HANDLING DEVICE

E. John Summersby, 4580 W. 170th St., Lawndale, Calif. 90260

Filed Apr. 10, 1978, Ser. No. 894,927
Int. Cl.[2] B65D *71/00*
U.S. Cl. 224—45 K **1 Claim**



1. A handling device comprising:

an upright cylindrical body for receiving items to be handled, said body having two substantially identical semi-cylindrical sections which form said body when connected, wherein each of said body sections includes an internally laterally extending projection stem for attaching said sections one to the other;

said sections are joined along longitudinally extending edges wherein each section includes one longitudinal projection and one longitudinal groove;

a flange at one end portion of said body for limiting movement of and providing support for said items;

means at said other end portion of said body for cooperating with a handle whereby said body can be carried;

a handle connected to said other end portion moveable between extended and retracted positions, said handle including two arms and a grip portion, wherein each of said arms includes at one end portion an elongated slot-like opening forming a boundary surface for guiding said arms relative to said body during movement between said extended and retracted positions, and at an opposite end portion a spring seat projection for engaging a biasing spring wherein the opposite end portions of said arms are biased outwardly when said arms are in said extended position;

said body including internally extending pads which extend through said slot-like opening for sliding along said boundary surface and tabs mounted to said pads for entrapping said arms; and

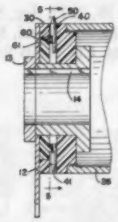
said spring positioned in said grip portion for biasing said arms outwardly when in said extended position.

4,162,032

PINWHEEL ASSEMBLY HAVING IMPROVED PINS

Frank J. Lockwood, 7011 W. Archer Ave., Chicago, Ill. 60638

Filed Aug. 7, 1978, Ser. No. 931,549
Int. Cl.[2] B65H *17/38*
U.S. Cl. 226—81 9 Claims



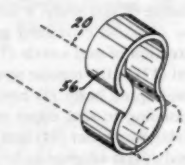
1. An improved pinwheel assembly for paper feeding and the like, rotatable about an axis, having a cylinder, a plurality of pins, each of said pins being movably mounted in a seat of a certain diameter in said cylinder and having a follower, said follower being engaged with a camming surface for reciprocal travel in said seat toward and away from said axis of rotation of said pinwheel, each of said pins having a body formed of a high lubricity plastic, said body having a steel tip, integrally mounted within said pin body, said plastic providing a substantially friction-free travel of said pin body in said seat and said steel tip providing an increased wear capability in the feeding of paper, thereby leading to an increased wear life of the entire pinwheel assembly.

4,162,033

POWDER ACTUATED TOOL

Raymond V. Pomeroy, Portland, Oreg., assignor to Omark Industries, Inc., Portland, Oreg.

Division of Ser. No. 817,386, Jul. 20, 1977, Pat. No. 4,114,792.
This application Mar. 8, 1978, Ser. No. 884,433
Int. Cl.[2] B25C *1/14*
U.S. Cl. 227—10 1 Claim



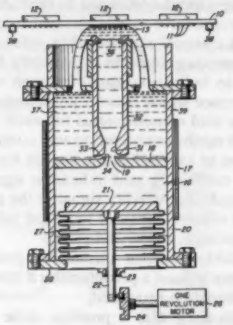
1. A tool for explosively driving elongated fasteners comprising a housing, a barrel mounted in the housing, a piston slideably carried in the barrel and adapted to be explosively driven from a ready-to-be-fired position at the rear of the barrel toward the forward end of the barrel, a barrel extension removably screwed into a main body portion of the barrel to be removed for replacement of the piston, and a resilient retaining clip in the barrel extension that frictionally engages the piston to prevent free sliding of the piston and to hold the piston in the ready-to-be-fired position, and said clip protruding out of a slot in the extension and into engagement with the main barrel portion to resist screwing of the barrel extension relative to the main barrel portion.

4,162,034

EJECTOR CONTROLLED SOLDERING DEVICE

Emil P. Pavlas, Villa Park, Ill., assignor to Western Electric Company, Incorporated, New York, N.Y.

Filed May 3, 1978, Ser. No. 902,612
Int. Cl.[2] B23K *3/06*
U.S. Cl. 228—37 10 Claims



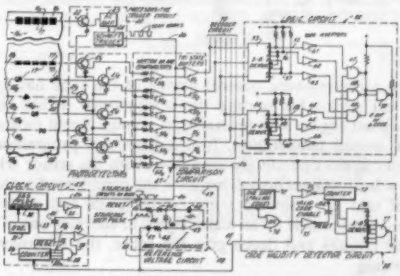
1. A solder fountain apparatus, which comprises:
a flow well having a necked down throat at the lower end thereof;
a plate having an opening aligned with and spaced from said throat;
means for applying pressurized solder through said opening and said throat to flow through and out the upper end of said well; and
means for collecting the overflowing solder about said space between said throat and plate so that portions of said overflow solder are drawn through said space and into said throat by the solder flowing through said throat.

4,162,035

HIGH RESOLUTION OPTICAL POSITION CODE DETECTOR FOR INFORMATION RECORDED ON RECORD CARRIER PARTIALLY IN HUMANLY INTELLIGIBLE FORM

Robert K. Calzetta, Cincinnati, Ohio, assignor to General Signal Corporation, Stamford, Conn.

Filed Sep. 23, 1977, Ser. No. 835,920
Int. Cl.[2] G06K *7/14, 19/06;* G08C *9/06*
U.S. Cl. 235—456 13 Claims



5. A system for detecting a position code representative of information encoded on a record carrier, comprising:
a record carrier having a first predetermined light-reflective characteristic, said record carrier being divided into at least one track, said at least one track being subdivided into a plurality of channels, said channels having at least one data mark recorded therein to form a position code representative of recorded information, at least one of said data marks being recorded in humanly intelligible form as

an alphanumeric character, said data marks having a second predetermined light-reflective characteristic;

a light source for impinging light on said record carrier;

an array of photodetectors proximate said record carrier to receive light reflected from said record carrier, each photodetector in said array of photodetectors for producing a channel signal proportional to the intensity of light reflected from each of said channels;

a comparison circuit connected to said array of photodetectors and responsive to said channel signals for comparing each said channel signal with a reference signal cycled from a low magnitude to a relatively high magnitude to produce an indication signal for each said channel when said reference signal bears a predetermined relation with respect to said channel signal for each said channel;

logic circuit means connected to said comparison circuit and responsive to said indication signals for said channels for logically combining said indication signals for said channels to produce a validity signal in the presence of a position code representative of recorded information encoded on said record carrier; and

a code validity detector circuit for producing a control signal when at least a predetermined number of successive validity signals is produced,

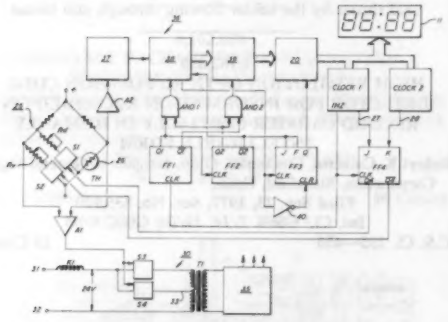
thereby indicating that a position code representative of recorded information appears in said channels.

4,162,036

SOLID STATE THERMOSTAT WITH DIGITAL DISPLAY

Richard R. Balduzzi, Van Buren Rd., Syracuse, N.Y. 13209, and Richard W. French, Liverpool, N.Y., assignors to Richard R. Balduzzi, Syracuse, N.Y.

Filed Nov. 14, 1977, Ser. No. 851,507
Int. Cl.[2] G05D *23/00*; F23N *5/20*
U.S. Cl. 236—47 **12 Claims**



1. In a thermostatic control device of the type having an electrical sensor for sensing the temperature within an air conditioned region and generating a voltage signal indicative of the sensed temperature, first and second programmable control circuits operatively associated with the sensor which, when selectively energized, maintain the conditioned region at one of said programmed temperature levels and switching means conditionable by an alarm signal to energize one of said control circuits and deenergize the other, the improvement comprising

a digital display for providing a visual readout in response to a coded input,

temperature measuring means for generating a coded output in response to the voltage signal produced by said sensor for driving the display to provide a readout of the sensed temperature,

first and second clock means being adapted to generate a coded output signal for driving said display to provide a readout of a time contained in said clock, each clock further including an alarm circuit for applying a conditioning alarm signal to said switching means when an alarm time stored in said clock is reached, and

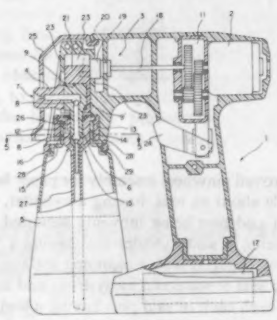
selecting means operatively associated with the input of said display to connect one of said coded outputs to said display and disconnect the other of said coded outputs whereby a desired readout is presented in said display.

4,162,037

AUTOMATIC SPRAYER

Masaya Koyama, 4-21-4, Kizuri, Higashiosaka-shi, Osaka-fu, Japan

Filed Jul. 18, 1977, Ser. No. 816,354
Claims priority, application Japan, May 20, 1977, 52-59058
Int. Cl.[2] B05B *9/04*
U.S. Cl. 239—332 **2 Claims**



1. A powered sprayer comprising a spray body (1), a prime mover (2) mounted to said spray body (1), driving means (3) operatively associated with said prime mover (2), a nozzle body (4) to be driven into vertical reciprocal motion by said driving means (3) a container (5) for containing liquid, said container (5) being so constructed that said contained liquid is adapted to be sprayed upon reciprocating motion of said nozzle body (4), said nozzle body (4) being independently constructed so as to be removable from said spray body (1); an upper working surface (9) and a lower working surface (9') on said driving means, an upper abutment surface (10) and a lower abutment surface (10') on said nozzle body (4) adapted to contact said upper and lower working surfaces (9,9') respectively for vertical reciprocal motion of said nozzle body (4); said nozzle body (4) further including a nozzle (7) and a plunger (6) in the inside of said body, a valve structure (8) for permitting the flow of liquid contained in said container (5) only toward the direction of said nozzle (7); said container (5) having an upper end (12) in the regular square form as viewed from above, and said spray body (1) having an engagement cavity (13) corresponding to said upper end (12); said upper end (12) further having a cylinder (14) into which said plunger (6) of said nozzle body (4) is adopted to be inserted, said cylinder (14) having at the lower portion thereof a through bore (15) for guiding air compressed in said cylinder (14) to the inside of said container (5)

4,162,038

ROTARY SPRINKLER IMPACT ARM SPRING ADJUSTMENT

H. C. Ridgway, Dallas, Tex., assignor to Telsco Industries, Inc., Dallas, Tex.

Division of Ser. No. 759,727, Jan. 17, 1977, Pat. No. 4,103,828. This application Mar. 20, 1978, Ser. No. 888,159
Int. Cl.[2] B05B *3/14*
U.S. Cl. 239—206 **12 Claims**

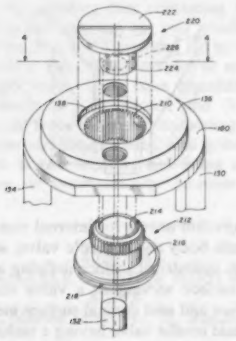
1. Adjustment means for the bias spring on an impact arm of

an impact sprinkler having a laterally directed nozzle cooperating with the impact arm comprising:

a shaft extending above the nozzle on which the impact arm is journaled;

a cage extending above the nozzle within which the arm is mounted and having a top plate with a toothed internal ring gear formed in an aperture therethrough and a concentric circular seat formed immediately above the internal ring gear;

a helical biased spring surrounding said shaft and secured at the lower end to the impact arm;



a bushing having a toothed epicyclic gear for mating with the teeth of the internal gear in the top plate, said epicyclic gear having fewer teeth formed around the circumference thereof than teeth in said internal gear, and said epicyclic gear receiving the upper end of said helical spring and having a concentric aperture formed therein; and

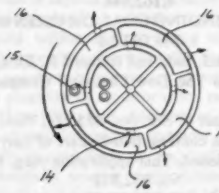
an adjustment fitting having a head for seating in the concentric circular seat in the top plate of said cage and an eccentric bushing extending therefrom to engage the concentric aperture in said epicyclic gear whereby turning said adjustment fitting engages said epicyclic gear with said internal gear to turn said epicyclic gear thereby adjusting said helical spring.

4,162,039

FEEDING AND MIXING NOZZLE

Stig L. Hallerback, Vastra Frolumda, and Leif Lachonius, Surte both of Sweden, assignors to Aktiebolaget SKF, Gothenborg, Sweden

Filed May 19, 1977, Ser. No. 798,647
Claims priority, application Sweden, Jul. 5, 1976, 7607647
Int. Cl.[2] B05B *3/02*
U.S. Cl. 239—214.25 **2 Claims**



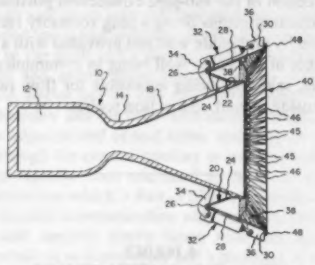
1. A nozzle for dosing, feeding and if necessary mixing liquid and/or solid components, comprising a rotatable vessel having a pouring opening in its upper portion and a plurality of outlet openings disposed at its lower portion, said vessel rotatable about a central vertically disposed axis and comprising inner and outer sections concentrically arranged and connected in series, said inner section divided into a plurality of inner chambers by vertically oriented equiangularly spaced partition walls, said outer section divided into a plurality of outer chambers, each of said inner chambers having a flow port communicating with said outer chambers in the outer section.

4,162,040

EXTENDIBLE/EXPANDABLE NOZZLE FOR ROCKET ENGINES AND THE LIKE AND METHOD OF MAKING SAME

Lee F. Carey, North Tonawanda, N.Y., assignor to Textron Inc., Providence, R.I.

Continuation of Ser. No. 637,405, Dec. 3, 1975, abandoned. This application Nov. 11, 1977, Ser. No. 850,695
Int. Cl.[2] B64C *15/00*
U.S. Cl. 239—265.33 **12 Claims**



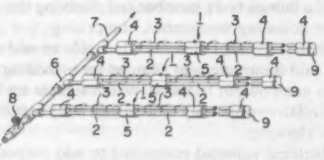
1. In combination, an auxiliary skirt device attached to the exit end of a rocket engine nozzle, said device being initially pleat-folded in a manner which permits said skirt to assume a generally annular planar form in a stowed position relative to the nozzle exit end, thereby requiring no substantial additional engine stowage space, said skirt device being so formed of thin sheet heat-resistant, substantially nonelastic material adapted to unfold upon engine firing into a frusto-conical configuration providing a constant slope extension of the engine nozzle, thereby increasing both the length and diameter of the effective engine nozzle skirt combination.

4,162,041

LIQUID SPRINKLING DEVICE OF COMPOSITE PIPE TYPE

Shinichi Hane, 251-6, Oaza Muranaka, Komaki-Shi, Aichi-ken, Japan, assignor to Yamshita & Associates Ltd. and Shinichi Hane, both of Tokyo, Japan

Filed Feb. 15, 1977, Ser. No. 768,883
Claims priority, application Japan, Feb. 19, 1976, 51/17353; May 22, 1976, 51/64701[U]; May 22, 1976, 51/64702[U]
Int. Cl.[2] A01G *27/00*
U.S. Cl. 239—266 **4 Claims**



1. A liquid sprinkling system employing connection sockets, each of said sockets comprising: a tubular connection portion for connection of a main pipe and at least one tubular connection for connection of a sub-pipe, said main pipe and said sub-pipe being connected between an associated connection socket; said tubular main pipe connection portion and tubular sub-pipe connection portion communicating with each other through an opening disposed proximate a central portion

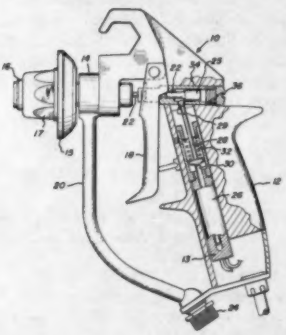
thereof, said sub-pipe connection portion having a single opening for allowing liquid to flow only in one particular axial direction along an axis of said sub-pipe connection portion and an internal closure inside thereof, for preventing flow of liquid in an opposite axial direction of the sub-pipe connection portion; adjusting means for adjusting a flow rate of liquid passing through said opening proximate said central portion; each of said connection sockets being further defined by a cylindrical guide wall inside said sub-pipe connection portion extending at the peripheral edge of said opening up to an upper internal surface of the sub-pipe connection portion and said single opening in the sub-pipe connection portion being a hole provided at one of two diametrically opposing positions thereon in an axial direction of the sub-pipe connection portion, and said flow rate adjusting means being a plug rotatably received in a space defined by said guide wall and provided with a hole flush with said hole in the guide wall being in communication with said opening, said plug being accessible for flow rate control from the outside of said connection socket.

4,162,042

SPRAY GUN SAFETY SENSOR

Gordon V. Mommsen, Brooklyn Center; Dale R. Hemming, and Richard E. Hudrlik, both of Fridley, all of Minn., assignors to Graco Inc., Minneapolis, Minn.

Filed May 27, 1977, Ser. No. 801,935
Int. Cl.[2] B05B 7/02
U.S. Cl. 239—526 **12 Claims**



1. A proximity detector and spray disabling apparatus attachable to a spray gun body for detecting the proximate presence of a human body member and disabling the spray gun spray valve actuating mechanism, comprising:

(a) an electrical sensor element attachable to said spray gun body, said sensor element adapted for providing electrical signals at an output terminal, which signals are indicative of the relative proximity of a human body member to said sensor element;

(b) an electrical solenoid connected to said output terminal, said solenoid having an actuating member which moves in response to said signals;

(c) a trigger actuator engageable in operable arrangement with said spray valve actuating mechanism; and

(d) a slide bolt coupled to said solenoid actuating member and moveable to engage and disengage said trigger actuator with said valve actuating mechanism;

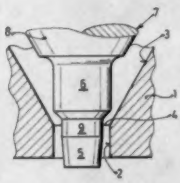
Whereby the relative proximity of a human body member to said sensor element causes said trigger actuator to become disengaged with said spray valve actuating mechanism.

4,162,043

FUEL INJECTION NOZZLE

Ewald Eblen, Stuttgart, and Karl Hofmann, Neckarrems, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 28, 1978, Ser. No. 881,931
Claims priority, application Fed. Rep. of Germany, Mar. 8, 1977, 2709892
Int. Cl.[2] F02M 61/04
U.S. Cl. 239—533.3 **3 Claims**



1. In a fuel injection nozzle for internal combustion engines including a nozzle body and a needle valve, said nozzle body having a central, cylindrical surface defining an injection port and a conical surface serving as a valve seat, said central, cylindrical surface and said conical surface merging to form a dividing edge, said needle valve having a sealing cone portion, a cylindrical throttle pin portion downstream thereof and extending into said injection port when the needle is in the closed condition and a spray-forming pin portion downstream of said throttle pin portion, the diameter of said spray-forming portion being less than the diameter of said throttle pin portion, said needle valve being displaceable in the nozzle body by the fuel pressure in a direction opposite to the direction of fuel flow and against a closing force between a closed position where the sealing cone portion engages the conical surface and a fully opened position, the improvement in the needle valve, comprising:

a cylindrical section forming part of the spray-forming pin portion and situated immediately adjacent to and downstream of said throttle pin portion, and wherein the cylindrical section and the dividing edge are in opposition when the needle valve is in its fully opened position, and together define the narrowest flow cross section obtainable with the spray-forming pin portion.

4,162,044

PROCESS FOR GRINDING COAL OR ORES IN A LIQUID MEDIUM

Willy Manfroy, Carmel, Ind., and Richard R. Klimpel, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 853,734, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,782, May 19, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,872
Int. Cl.[2] B02C 23/18
U.S. Cl. 241—16 **25 Claims**

1. A process for grinding coal or ores containing metal values comprising carrying out said grinding in the presence of a liquid medium and a polyelectrolyte grinding aid comprising acrylic or methacrylic acid polymers or copolymers of the same with each other or with other ethylenically unsaturated monomers, said grinding aid being dispersible in said medium and being employed in an amount effective to provide increased grinding efficiency.

4,162,045
ORE GRINDING PROCESS

Melvin F. Katzer, Danville, Calif.; Richard R. Klimpel, Midland, Mich., and Willy Manfroy, Carmel, Ind., assignors to The Dow Chemical Company, Midland, Mich.

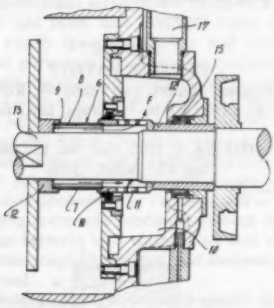
Continuation-in-part of Ser. No. 853,735, Nov. 21, 1977, abandoned, which is a continuation-in-part of Ser. No. 687,795, May 19, 1976, abandoned. This application Aug. 11, 1978, Ser. No. 932,884
Int. Cl.[2] B02C *23/18*
U.S. Cl. 241—16 22 Claims

1. A process for grinding ores containing metal values or coal, which comprises carrying out said grinding in the presence of a liquid medium and a grinding aid system comprising (a) a polyelectrolyte comprising acrylic or methacrylic acid polymers or copolymers of the same together or with other ethylenically unsaturated monomers, and (b) an inorganic compound selected from the group consisting of alkali metal salts of carbonates and bicarbonates, said grinding aid system being dispersible in said medium and being employed in an amount effective to synergistically increase grinding efficiency.

4,162,046
HORIZONTAL-AXLE GRINDER WITH ROTATABLE SIEVE

Carlos O. Pujol, Marina Street No. 51, Badalona (Barcelona), Spain

Continuation of Ser. No. 729,299, Oct. 4, 1976, abandoned. This application May 1, 1978, Ser. No. 901,911
Claims priority, application Spain, Jul. 20, 1976, 449.975
Int. Cl.[2] B02C *23/10*
U.S. Cl. 241—46.17 1 Claim



1. In a cooled horizontal-axle grinder, such as for the predispersion of solids in liquids, which grinder includes wall means defining therein a grinding chamber, grinding bodies such as balls positioned within said grinding chamber, a rotatable agitator shaft extending horizontally through said grinding chamber and supported for rotation about a substantially horizontal axis, a plurality of agitator discs mounted on said shaft for rotation therewith, said discs being axially spaced apart along said shaft and having an endmost disc positioned adjacent but axially spaced from an end wall of said chamber to define a substantially annular region therebetween which surrounds said shaft and comprises a part of said grinding chamber, said end wall having a central opening through which passes said shaft, a sieve structure associated with said region for straining the treated product which is withdrawn from the grinding chamber, a discharge reservoir located on the opposite side of said end wall from said grinding chamber, and discharge opening means communicating with said discharge reservoir, the improvement wherein said sieve structure comprises:

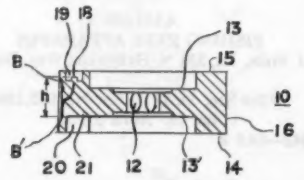
a first mounting structure fixed to said shaft and disposed directly adjacent the endmost disc, a second mounting structure fixed to said shaft in axially spaced relationship to said first mounting structure, said second mounting structure being positioned in the vicinity of said end wall, an elongated thin-wall sleeve-like sieve fixedly mounted on and extending axially between said first and second mounting structures, said sieve being concentric with and spaced radially outwardly from said shaft so as to define an annular intermediate chamber therebetween which is free of obstructions, said intermediate chamber communicating with said region of the grinding chamber through said sieve, said region also being free of obstructions except for the presence of said sieve, whereby the treated product can flow from said grinding chamber radially inwardly through said region and then radially inwardly through said sieve into said intermediate chamber;

said second mounting structure including a support member fixed to the shaft and a support sleeve positioned in concentric and surrounding relationship to said shaft, said support sleeve having one end thereof fixed to said support member and the other end thereof fixedly connected to the adjacent end of said sieve, said support sleeve passing through the central opening in said end wall and being spaced radially from said shaft to define a compartment therebetween which is free of obstructions and which is in open coaxial communication with said intermediate chamber, said support sleeve being rotatably and sealingly supported on said end wall, and a plurality of radial openings formed through said support sleeve on the opposite side of said end wall from said sieve for permitting discharge of the treated product from said compartment into said discharge reservoir.

4,162,047
HUB FOR USE IN A TAPE CASETTE

Noritsugu Hashimoto, Takaoka, Japan, assignor to Hitachi Maxell, Ltd., Osaka, Japan

Filed Feb. 17, 1978, Ser. No. 878,727
Claims priority, application Japan, Feb. 18, 1977, 52-19389[U]
Int. Cl.[2] B65H *75/26;* B29F *1/00*
U.S. Cl. 242—68.5 6 Claims



1. A hub for use in a tape cassette for winding a recording tape, said hub comprising:

a cylindrical body on which a recording tape is wound;

a first outer annular surface formed on one end of said cylindrical body;

a first inner annular surface formed coaxially with said first outer annular surface and being stepped inwardly from said first outer annular surface;

a second outer annular surface formed on an opposite outer end of the cylindrical body to the first outer annular surface;

a second inner annular surface formed on an opposite inner annular surface to the first inner annular surface and being stepped inwardly from the second outer annular surface;

a drive shaft inserting hole defined at the center portion of the hub;

a notch defined in the cylindrical body for fastening the end portion of the recording tape in association with a tape securing member adapted to fit into the notch;

a resin injection gate surrounded by a first concave recess defined in the first outer annular surface; and

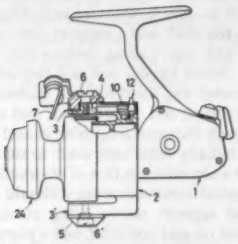
a second concave recess formed on the second outer annular

surface at a position opposite to the resin injection gate, the bottom face of the second concave recess being substantially parallel to the second inner annular surface.

4,162,048
SPINNING REEL WITH ADJUSTABLE BAIL ARM RETURN SPRING

Kounin Sazaki, Fukuyama, Japan, assignor to Ryobi Ltd., Fuchu, Japan

Filed Feb. 16, 1978, Ser. No. 878,352
Claims priority, application Japan, Feb. 16, 1977, 52-18269[U]
Int. Cl.[2] A01K *89/00*
U.S. Cl. 242—84.2 G **5 Claims**



1. In a spinning reel including a reel body, a rotor journalled to the reel body, a pair of bail supports projecting outwardly from the diametrically opposite sides of the rotor, a bail arm secured at one end to a bail arm lever and at the other end to a bail arm pivot cam, both rotatably journalled on the bail supports, spring tension adjustment means characterized by:

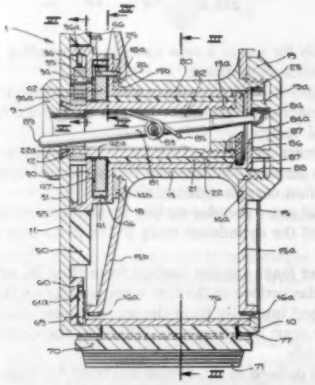
(a) a bail arm return spring positioned in one of the bail supports which secures the bail arm lever, one end of the spring being fitted into the bail arm lever, and

(b) a cam member rotatably supported in the bail support, the other end of the bail arm return spring being contacted to the cam member to change the biasing force thereof.

4,162,049
FISHING REEL APPARATUS

William H. Stutz, Jr., 231 N. Hollywood Way, Burbank, Calif. 91505

Filed Sep. 14, 1977, Ser. No. 833,238
Int. Cl.[2] A01K *89/02*
U.S. Cl. 242—84.5 R **9 Claims**



1. In a fishing reel for storing, retrieving, and controlling the withdraw of fishing line from the reel, said fishing reel having a reel frame mountable to an associated fishing rod and a line spool having peripheral spool rim portions rotatably mounted with respect to said reel frame, the improvement in said fishing reel comprising:

support spindle means rotatably mounted with respect to said reel frame for supporting and mounting said line spool;

means for preventing relative rotation between said spindle means and said line spool;

drag hub means having peripheral hub portions and being rotatably mounted to said frame and operationally connected to said support spindle means by a unidirectional clutch;

drag shoe means having a portion thereof fixedly mounted relative to said frame, said drag shoe means being generally coplanar with and in contact with said peripheral hub portions of said drag hub means are provided for restricting rotation of said hub means relative to said frame;

variable means for pre-selectably varying contact pressure between said drag hub means and said drag shoe means thereby pre-selectably varying the amount said rotation of said hub is restricted;

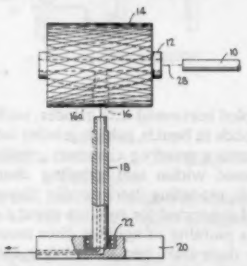
manual brake means operable independently of operation of said drag shoe means having arcuate pressure plate means mounted to said reel frame adjacent said peripheral spool rim portions of said line spool for supplementally restricting rotation of said line spool when said pressure plate means is manually adjusted radially inwardly relative to said spool and is brought into contact with said peripheral rim portions of said line spool; and

actuator means associated with said variable means and said manual brake means for actuating said variable means when said actuator means is adjusted circumferentially with respect to said spool and for actuating said manual brake means when said actuator means is adjusted radially with respect to said spool.

4,162,050
OUTSIDE PAYOFF

William A. Wagner, Somers, and Frank W. Kotzur, Mahopac, both of N.Y., assignors to Windings, Inc., Goldens Bridge, N.Y.

Filed Sep. 6, 1977, Ser. No. 831,085
Int. Cl.[2] B65H *55/00*
U.S. Cl. 242—163 **17 Claims**



1. A method for providing outside payoff from at least one package of flexible strip-like material wound in a figure-8 pattern with a radial hole extending from the central core space of the winding to the outer coil thereof, comprising the steps of:

inserting a swivable support member having a longitudinal axis into the radial hole of the wound material;

mounting said support member to enable oscillation about the longitudinal axis thereof; and

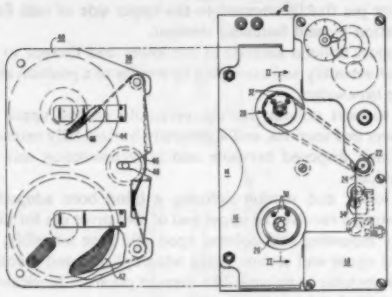
paying out the wound material from its outer end by pulling it in a direction transverse to the longitudinal axis of the wound material.

4,162,051

TAPE RECORDER HAVING MAGNETICALLY CONTROLLED TAPE TENSIONING

William P. Doby, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 2, 1978, Ser. No. 930,293
Int. Cl.[2] G03B *1/04*
U.S. Cl. 242—201 8 Claims



1. A tape recorder device having a tape transport assembly for continuously moving a recording tape between supply and take-up reels, comprising:

a capstan assembly including a capstan shaft having an upper end for drivingly engaging the recording tape, and a drive motor having a direct drive engagement with a lower end of said capstan shaft;

a supply spindle assembly including a spindle shaft carrying a supply reel engaging member at the upper end thereof and a magnetic brake arrangement mounted about a lower portion of said shaft, said magnetic brake arrangement including axially spaced stationary and rotatable parts, one of said parts being formed of a permanent magnet material and including a plurality of circumferentially spaced magnetic poles and the other of said parts being a plate of a permeable magnetic material, and said supply spindle assembly further including a non-magnetic spacer washer made of plastic film material supporting said rotating part on said stationary part such that the axial spacing of said parts is determined by the thickness of said washer and retarding forces are produced by both the frictional engagement between said washer and said rotating part and magnetic coupling between said stationary and rotating parts; and

a take-up spindle assembly including a spindle shaft carrying a take-up reel engaging member at the upper end thereof and a clutch arrangement mounted about a lower portion of said spindle shaft, said clutch arrangement including driving and driven parts with said driven part being connected in continuously driven relationship with the lower end of said capstan shaft.

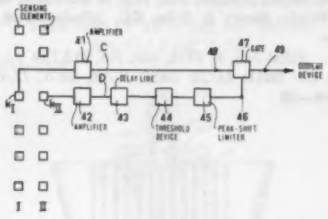
4,162,052

NIGHT GUIDANCE OF SELF-PROPELLED MISSILES

Pierre M. L. Lamelot, Ville d'Avray, France, assignor to Societe Anonyme de Telecommunications, Paris, France

Filed Dec. 15, 1976, Ser. No. 750,813
Claims priority, application France, Dec. 22, 1975, 75 39285
Int. Cl.[2] F41G *1/32, 1/36*
U.S. Cl. 244—3.16 5 Claims

3. A thermal telescope having a display device associated therewith for the night guidance of a self-propelled missile carrying an infrared tracer towards a target, comprising first detection means sensitive to infrared energy in a first spectral range corresponding to the maximum radiation from the target and the environment thereof, second detection means sensitive to infrared energy in a second spectral range corresponding to the maximum radiation from the tracer, first circuit means connected to the output of said first detection means, second circuit means connected to the output of said second detection means and means for subtracting the output of said second



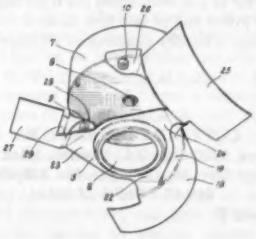
circuit means from the output of said first circuit means, said subtractor means having its output connected to said display device.

4,162,053

BRAKE DEVICE FOR ROTATING BODY

Björn O. Björnson, Karlskoga, Sweden, assignor to AB Bofors, Bofors, Sweden

Filed Nov. 28, 1977, Ser. No. 855,140
Claims priority, application Sweden, Dec. 27, 1976, 7614551
Int. Cl.[2] B64D *19/02*
U.S. Cl. 244—3.27 8 Claims



1. Braking assembly for retarding linear and rotative movement of a load carrying unit after ejection of the unit from an in-flight projectile, shell or the like, said braking assembly comprising:

a cylindrically-shaped hollow container surrounding said load carrying unit, said container having a closed end portion positioned adjacent an end portion of said unit;

a plurality of fasteners spaced about the periphery of said closed end portion of said container, said fasteners fixedly joining said adjacent end portions to one another;

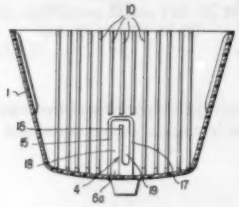
slit means extending through portions of said cylindrically shaped container and closed end portion for dividing said container into a plurality of sections, each said section having a substantially concave end portion extending circumferentially about a portion of said load carrying unit;

whereby each of said concave end portions pivots away from said unit to form a blade-like member having a concave brake surface functioning to retard both the linear and rotative movement of said carrying unit and attached container.

4,162,054
FILTERING DEVICE FOR PRODUCING EXTRACTS FROM COFFEE OR TEA

Reinhard Häuslein, Minden, Fed. Rep. of Germany, assignor to Melitta-Werke Bentz & Sohn KG, Minden, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,759
Int. Cl.[2] B01D *23/28;* B65B *39/00;* B67C *11/00*
U.S. Cl. 248—94 5 Claims

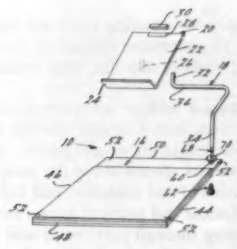


1. In a one-piece, molded, filter holder device for producing aromatic extracts from coffee or tea, including a filter vessel having an extract outlet and arranged to receive a filter bag, the improvement wherein said vessel is provided with an outlet opening in the vicinity of its bottom and said extract outlet comprises a plurality of guide ribs projecting from the interior wall of said vessel and defining a first channel section extending upwardly from a location spaced from said outlet opening and immediately adjacent the lowest point of the interior of said vessel, and a second channel section communicating at its lower end with said outlet opening, said first and second channel sections communicating with one another at their upper ends to form a conduit which is laterally open toward the interior of said vessel, said guide ribs being arranged to permit a filter bag inserted in said vessel to rest tightly thereagainst to close the laterally open side of said conduit and to enable said conduit to operate as a siphon, when the filter bag is filled with water, with the lower end of said first channel section defining a suction opening, whereby cleaning of all interior surfaces is facilitated.

4,162,055
COPYHOLDING DEVICE

Rodney Summers, 9200 Gale Rd., Pontiac, Mich. 48054

Filed Dec. 14, 1977, Ser. No. 860,600
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—441 R 1 Claim

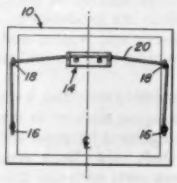


1. A coypholding device comprising,
a generally flat base assembly adapted to have a typewriter or similar apparatus mounted thereon,
said base assembly being of a multiple layer construction including a relatively rigid intermediate layer, a lower relatively soft and compliant layer providing an acoustical barrier, and an upper layer that is also of a soft and compliant nature but which is not as soft and compliant as said lower layer and is intended to limit movement of said typewriter or similar apparatus relative to said base assembly,
said intermediate layer extending outwardly from the adjacent edges of said upper and lower layers at one side of said base assembly and defining a projecting flange portion,
said flange portion having an opening formed at one end thereof through which an upwardly extending fastening element is disposed,
a pivot pin fixedly secured to the upper side of said flange portion by said fastening element,
a support column secured at the lower end thereof to said base assembly and extending upwardly to a position above the typewriter,
said support column having vertically spaced upper and lower end sections, and a generally horizontally extending section disposed between and interconnecting said end sections,
said lower end section defining a blind bore adapted to nestingly receive the upper end of said pivot pin for pivotally mounting said column upon said base assembly, and said upper end section being telescopically and pivotably connectable to an easel-like support platform fabricated of a molded polymeric material,
said support platform including a support portion extending outwardly therefrom and underlying and supporting worksheets which are to be copied with the typewriter.

4,162,056
PICTURE HANGING SYSTEM

Ritchie R. Moorhead, P.O. Box 6, Athens, Pa. 18810

Filed Jun. 9, 1978, Ser. No. 913,946
Int. Cl.[2] A47G *1/24*
U.S. Cl. 248—495 5 Claims



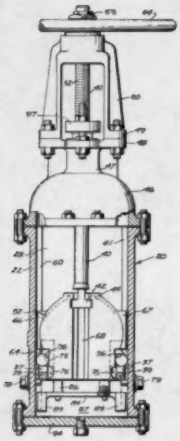
1. In a hanging system for a wall hanging; a wall hanging, a flexible suspension member, a wall mount for receiving a horizontal intermediate section of the flexible suspension member and supporting said suspension member, and means on the wall hanging to mount said suspension member, said means comprising a pair of anchor members fixed to the wall hanging to the opposite sides of and below the center of gravity of the wall hanging, and a pair of guide members fixed to the wall hanging vertically above and aligned with the anchor members, said flexible susupension member having the opposite ends thereof fixed to the anchor members, said suspension member extending from one anchor member vertically about the guide member thereabove, horizontally across to the second guide member and vertically to the second anchor member therebelow, said intermediate section of the flexible suspension member comprising that section between the guide members, said intermediate section being tensioned between the guide members independently of said wall mount.

4,162,057

LINEAR RETRACTABLE SEAL VALVE

Javed Qasim, Diamond Bar, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 5, 1978, Ser. No. 893,708
Int. Cl.[2] F16K 25/00
U.S. Cl. 251—168 11 Claims



1. In a linear retractable seal valve having a body with an inlet and outlet port and a fluid passageway therebetween, said body having a lateral passageway perpendicular to the fluid passageway with a wedge-slip assembly moveable longitudinally therein from a valve open first location within the lateral passageway to a distant second location where the assembly is positioned in the fluid passage-way between the two ports of the valve, said assembly having at least one closure slip with an inside face of the slip slideably enaging a tapering face of the wedge and with the slip at second location being restrained from further longitudinal movement and moveable in a perpendicular direction of the longitudinal assembly movement into closure engagement with one of the valve ports, two diametrically-opposed guide rails extending longitudinally of the inside face of the lateral passageway and into the fluid passageway, said assembly being moveably held by grooves at opposite side edges of the wedge to the guide rails of the valve body, said guide rails lying in a plane paralleling the two valve ports, with the valve being returned to its open position through a reverse sequential movement, the improvement:

wherein at least one of said rails terminates at the second location on the inside wall of the fluid passageway and with the end surface of the terminated rail providing a ramp;

said wedge on at least one side edge thereof having a locking notch extending in a transverse direction to the longitudinal assembly movement, said notch being in the side edge of the wedge adjacent the terminated rail;

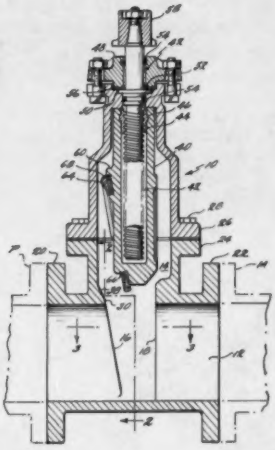
a roller parallel to the locking notch in engagement with a supporting surface of the slip and positioned to move into and out of the notch at the second valve location, said roller when in the locking notch of the wedge and in engagement with the longitudinal edge of the adjacent guide rail serving to lock the slip to the wedge, thus precluding perpendicular movement of the slip during longitudinal movement of the assembly between the two valve locations, said roller in one of its positions unlocks the slip from the wedge by moving out of the locking notch and out of contact with the longitudinal edge of the rail and into engagement with the ramp at the end of said rail.

4,162,058

RESILIENT SEATED GATE VALVE WITH IMPROVED SEAT ARRANGEMENT

Daniel A. Ellis, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed May 19, 1977, Ser. No. 798,686
Int. Cl.[2] F16K 3/314
U.S. Cl. 251—326 20 Claims



1. A gate valve structure for use in mains carrying a fluid, said gate valve structure comprising:

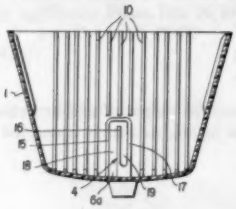
a valve casing having a through-bore for the flow of fluid, an elongated chamber intersecting said through-bore intermediate its ends and defining inlet and outlet ports to the chamber, and a valve seat in said casing surrounding one of said ports in said through-bore, said valve seat lying generally in a plane which converges at an acute angle to a plane normal to the axis of the through-bore, and said valve seat having an upper planar portion facing toward the other of said ports except at a bottom portion thereof where it merges into and forms a smooth and uninterrupted portion of said through-bore, said planar portion of said valve seat having an outer arcuate edge;

a generally flat gate member reciprocable in said elongated chamber from a closed position across said through-bore and seating against said valve seat to an opened position out of said through-bore, said gate member including a body member having an annular planar surface lying generally in a plane converging at an acute angle to a plane normal to the axis of the through-bore and generally complementary to the plane of said valve seat, said planar surface of said body member being surrounded on its radially outer periphery adjacent its upper portion by an arcuate shoulder terminating in circumferentially spaced ends and extending axially from the body member, said planar surface being further provided on its radially inner periphery by an annular shoulder extending axially from the body member, an annular resilient seal member received on said planar surface and bounded by the annular shoulder and the arcuate shoulder, said annular seal member being generally rectangular in radial section and having an upper bulbous portion extending axially therefrom for engaging the upper portion of said valve seat facing the other of said ports, said bulbous portion of said seal member, when relaxed, having a maximum axial thickness adjacent its upper portion in a plane extending through an axis of movement of said gate member and merging into a minimum axial thickness of said seal member at its lower portion, said seal member with its bulbous portion defining a valve seat engaging portion complementary to said valve seat when said gate member is in the closed position,

4,162,054
FILTERING DEVICE FOR PRODUCING EXTRACTS FROM COFFEE OR TEA

Reinhard Häuslein, Minden, Fed. Rep. of Germany, assignor to Melitta-Werke Bentz & Sohn KG, Minden, Fed. Rep. of Germany

Filed Jun. 8, 1978, Ser. No. 913,759
Int. Cl.[2] B01D *23/28;* B65B *39/00;* B67C *11/00*
U.S. Cl. 248—94 5 Claims

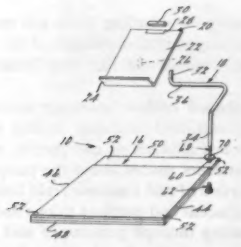


1. In a one-piece, molded, filter holder device for producing aromatic extracts from coffee or tea, including a filter vessel having an extract outlet and arranged to receive a filter bag, the improvement wherein said vessel is provided with an outlet opening in the vicinity of its bottom and said extract outlet comprises a plurality of guide ribs projecting from the interior wall of said vessel and defining a first channel section extending upwardly from a location spaced from said outlet opening and immediately adjacent the lowest point of the interior of said vessel, and a second channel section communicating at its lower end with said outlet opening, said first and second channel sections communicating with one another at their upper ends to form a conduit which is laterally open toward the interior of said vessel, said guide ribs being arranged to permit a filter bag inserted in said vessel to rest tightly thereagainst to close the laterally open side of said conduit and to enable said conduit to operate as a siphon, when the filter bag is filled with water, with the lower end of said first channel section defining a suction opening, whereby cleaning of all interior surfaces is facilitated.

4,162,055
COPYHOLDING DEVICE

Rodney Summers, 9200 Gale Rd., Pontiac, Mich. 48054

Filed Dec. 14, 1977, Ser. No. 860,600
Int. Cl.[2] F16M *13/00*
U.S. Cl. 248—441 R 1 Claim



1. A coypholding device comprising,

a generally flat base assembly adapted to have a typewriter or similar apparatus mounted thereon,

said base assembly being of a multiple layer construction including a relatively rigid intermediate layer, a lower relatively soft and compliant layer providing an acoustical barrier, and an upper layer that is also of a soft and compliant nature but which is not as soft and compliant as said lower layer and is intended to limit movement of said typewriter or similar apparatus relative to said base assembly,

said intermediate layer extending outwardly from the adjacent edges of said upper and lower layers at one side of said base assembly and defining a projecting flange portion,

said flange portion having an opening formed at one end thereof through which an upwardly extending fastening element is disposed,

a pivot pin fixedly secured to the upper side of said flange portion by said fastening element,

a support column secured at the lower end thereof to said base assembly and extending upwardly to a position above the typewriter,

said support column having vertically spaced upper and lower end sections, and a generally horizontally extending section disposed between and interconnecting said end sections,

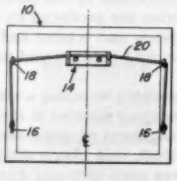
said lower end section defining a blind bore adapted to nestingly receive the upper end of said pivot pin for pivotally mounting said column upon said base assembly, and said upper end section being telescopically and pivotably connectable to an easel-like support platform fabricated of a molded polymeric material,

said support platform including a support portion extending outwardly therefrom and underlying and supporting worksheets which are to be copied with the typewriter.

4,162,056
PICTURE HANGING SYSTEM

Ritchie R. Moorhead, P.O. Box 6, Athens, Pa. 18810

Filed Jun. 9, 1978, Ser. No. 913,946
Int. Cl.[2] A47G *1/24*
U.S. Cl. 248—495 5 Claims



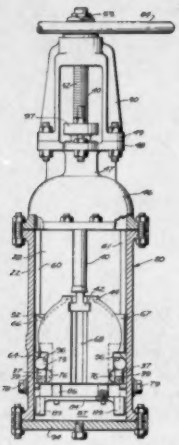
1. In a hanging system for a wall hanging; a wall hanging, a flexible suspension member, a wall mount for receiving a horizontal intermediate section of the flexible suspension member and supporting said suspension member, and means on the wall hanging to mount said suspension member, said means comprising a pair of anchor members fixed to the wall hanging to the opposite sides of and below the center of gravity of the wall hanging, and a pair of guide members fixed to the wall hanging vertically above and aligned with the anchor members, said flexible susupension member having the opposite ends thereof fixed to the anchor members, said suspension member extending from one anchor member vertically about the guide member thereabove, horizontally across to the second guide member and vertically to the second anchor member therebelow, said intermediate section of the flexible suspension member comprising that section between the guide members, said intermediate section being tensioned between the guide members independently of said wall mount.

4,162,057

LINEAR RETRACTABLE SEAL VALVE

Javed Qasim, Diamond Bar, Calif., assignor to Aerojet-General Corporation, El Monte, Calif.

Filed Apr. 5, 1978, Ser. No. 893,708
Int. Cl.[2] F16K *25/00*
U.S. Cl. 251—168 11 Claims



1. In a linear retractable seal valve having a body with an inlet and outlet port and a fluid passageway therebetween, said body having a lateral passageway perpendicular to the fluid passageway with a wedge-slip assembly moveable longitudinally therein from a valve open first location within the lateral passageway to a distant second location where the assembly is positioned in the fluid passage-way between the two ports of the valve, said assembly having at least one closure slip with an inside face of the slip slideably enaging a tapering face of the wedge and with the slip at second location being restrained from further longitudinal movement and moveable in a perpendicular direction of the longitudinal assembly movement into closure engagement with one of the valve ports, two diametrically-opposed guide rails extending longitudinally of the inside face of the lateral passageway and into the fluid passageway, said assembly being moveably held by grooves at opposite side edges of the wedge to the guide rails of the valve body, said guide rails lying in a plane paralleling the two valve ports, with the valve being returned to its open position through a reverse sequential movement, the improvement:

wherein at least one of said rails terminates at the second location on the inside wall of the fluid passageway and with the end surface of the terminated rail providing a ramp;

said wedge on at least one side edge thereof having a locking notch extending in a transverse direction to the longitudinal assembly movement, said notch being in the side edge of the wedge adjacent the terminated rail;

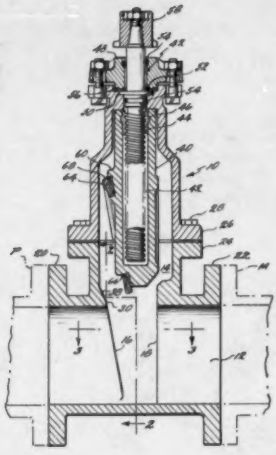
a roller parallel to the locking notch in engagement with a supporting surface of the slip and positioned to move into and out of the notch at the second valve location, said roller when in the locking notch of the wedge and in engagement with the longitudinal edge of the adjacent guide rail serving to lock the slip to the wedge, thus precluding perpendicular movement of the slip during longitudinal movement of the assembly between the two valve locations, said roller in one of its positions unlocks the slip from the wedge by moving out of the locking notch and out of contact with the longitudinal edge of the rail and into engagement with the ramp at the end of said rail.

4,162,058

RESILIENT SEATED GATE VALVE WITH IMPROVED SEAT ARRANGEMENT

Daniel A. Ellis, Decatur, Ill., assignor to Mueller Co., Decatur, Ill.

Filed May 19, 1977, Ser. No. 798,686
Int. Cl.[2] F16K *3/314*
U.S. Cl. 251—326 20 Claims



1. A gate valve structure for use in mains carrying a fluid, said gate valve structure comprising:

a valve casing having a through-bore for the flow of fluid, an elongated chamber intersecting said through-bore intermediate its ends and defining inlet and outlet ports to the chamber, and a valve seat in said casing surrounding one of said ports in said through-bore, said valve seat lying generally in a plane which converges at an acute angle to a plane normal to the axis of the through-bore, and said valve seat having an upper planar portion facing toward the other of said ports except at a bottom portion thereof where it merges into and forms a smooth and uninterrupted portion of said through-bore, said planar portion of said valve seat having an outer arcuate edge;

a generally flat gate member reciprocable in said elongated chamber from a closed position across said through-bore and seating against said valve seat to an opened position out of said through-bore, said gate member including a body member having an annular planar surface lying generally in a plane converging at an acute angle to a plane normal to the axis of the through-bore and generally complementary to the plane of said valve seat, said planar surface of said body member being surrounded on its radially outer periphery adjacent its upper portion by an arcuate shoulder terminating in circumferentially spaced ends and extending axially from the body member, said planar surface being further provided on its radially inner periphery by an annular shoulder extending axially from the body member, an annular resilient seal member received on said planar surface and bounded by the annular shoulder and the arcuate shoulder, said annular seal member being generally rectangular in radial section and having an upper bulbous portion extending axially therefrom for engaging the upper portion of said valve seat facing the other of said ports, said bulbous portion of said seal member, when relaxed, having a maximum axial thickness adjacent its upper portion in a plane extending through an axis of movement of said gate member and merging into a minimum axial thickness of said seal member at its lower portion, said seal member with its bulbous portion defining a valve seat engaging portion complementary to said valve seat when said gate member is in the closed position,

and said bulbous portion of said seal member preventing the lower portion of said seal member from dragging across said edge of said seat when said gate member is opened and closed;

means for retaining said seal member on the body member of said gate member; and

valve stem means operatively connected to said gate member and extending through said valve casing, said valve stem means being operative to move said gate member between the closed and opened positions.

4,162,059

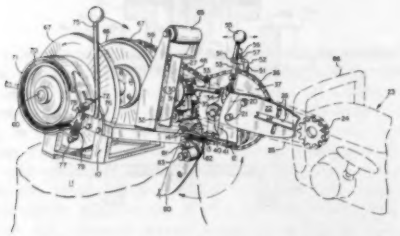
PORTABLE WINCH

Cleo L. Fletchall, 4526 Maria Ave., NE., Salem, Oreg. 97303

Filed Aug. 29, 1977, Ser. No. 828,298

Int. Cl.[2] B66D *3/18*

U.S. Cl. 254—187.4 **7 Claims**



1. A portable winch comprising a frame adapted to rest on a support, said frame extending lengthwise horizontally and having a front end and a rear end, a bracket mounted on said rear end of said frame, an upstanding vertical plate on said bracket having bolt holes for connection with one end of an adapter bar on a chain saw motor, said adapter bar guiding a drive chain driven by said motor, a first transverse shaft mounted on a pivotal arm on said bracket, an adjustable link connected between said arm and said bracket, a driven sprocket on said first shaft driven by said drive chain, a second transverse shaft mounted on said bracket rearward from said first shaft, a first sprocket on said second shaft driven by a second chain on a second sprocket on said first shaft, a clutch sprocket on said second shaft having a jaw clutch connection with said first sprocket on said second shaft, a clutch handle for shifting said clutch sprocket axially on said second shaft to engage and disengage said clutch, a transverse winch drum shaft mounted on the front end of said frame forward from said first shaft, a sprocket on said winch drum shaft driven by a third chain from said clutch sprocket, a hand brake on said winch drum shaft, and means to adjust said bracket lengthwise on said frame to tighten said third chain, said adjustable link serving to tighten said second chain, and said adapter bar and chain saw motor having means to tighten said drive chain.

4,162,060

SEMI-AUTOMATIC WATER TABLE

Harry E. Anderson, Pittsburgh; Kenneth E. Helsel, Sewickley, and Raymond E. Heasley, McKees Rocks, all of Pa., assignors to Anderson Engineers, Inc., Carnegie, Pa.

Filed Apr. 21, 1977, Ser. No. 789,509

Int. Cl.[2] B23K *7/08*

U.S. Cl. 266—49 **19 Claims**

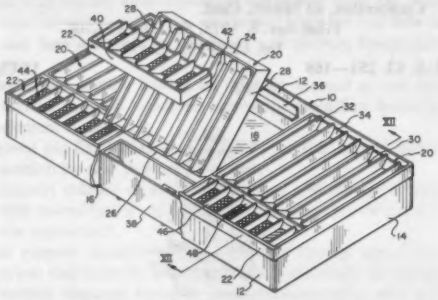
1. A water table suitable for use with a burning machine comprising:

A. a tank for holding water;

B. frame means carrying burning bars positioned in the open top of the tank and forming a burning table;

C. means for tilting said frame means relative to the tank;

D. means for supporting said frame means for lateral movement and for stabilizing the frame during tilting of the frame for emptying swarf and for lowering it; and



E. means for changing the level of water in the tank.

4,162,061

COOLING ELEMENT FOR A METALLURGICAL FURNACE

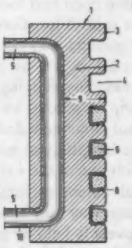
Hans-Eugen Bühler, Rheurdt; Günter Robusch, Essen; Herbert Schäfer, Dinslaken, and Karl-Heinz Peters, Duisburg, all of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hütte, Duisburg, Fed. Rep. of Germany

Filed Apr. 17, 1978, Ser. No. 896,795

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1977, 2719165

Int. Cl.[2] C21B *7/10*

U.S. Cl. 266—193 **11 Claims**



1. A cooling element for a metallurgical furnace, said cooling element including

a cast iron body having a front surface provided with recessed portions and a refractory lining facing the interior of the furnace received within said cast iron body and terminating substantially flush with the plane of the front surface of said cast iron body,

said cooling element having steel tubes for conveying a cooling fluid medium anchored in said cast iron body towards the rear surface thereof away from and spaced from said refractory lining,

said recessed portions having a cross-section which widens from the front surface of the cast iron body towards the rear thereof,

said refractory lining has a cross-section which substantially corresponds to the cross-section of said recessed portions and including a short measurement, said refractory lining being inserted into said recessed portions forming a space between said received refractory lining and the inner peripheral surface of said recessed portions, and

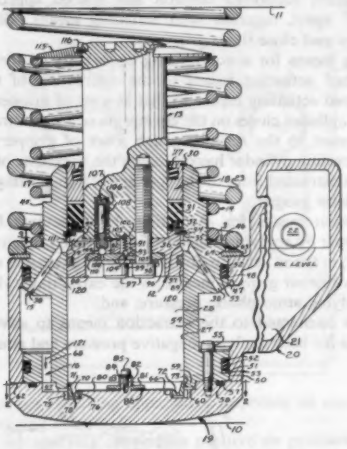
mortar filling said space and holding said refractory lining to said cast iron body facing the interior of the furnace.

4,162,062

HYDRAULIC RAILWAY CAR SWAY DAMPER

Paul Strauss, Chicago, Ill., assignor to Miner Enterprises, Inc., Geneva, Ill.

Filed Jun. 2, 1977, Ser. No. 802,799
Int. Cl.[2] B61F 5/12, 5/24; F16F 9/24, 9/36
U.S. Cl. 267—8 R 18 Claims



1. In a hydraulic snubber apparatus for sway control of railraod cars and comprising a body defining a hydraulic cylinder having a closed end and an open end, a piston in the cylinder and having a normal rest position therein and movable from the rest position deeper into the cylinder, a piston rod connected to said piston and extending outside of said cylinder, said body including a bearing and sealing means about the piston rod, a hydraulic fluid reservoir, discharge passageway means between the reservoir and the cylinder for the flow of hydraulic fluid from the cylinder to the reservoir as the piston moves deeper into the cylinder, orifice means and first check valve means in said discharge passageway means, return passageway means between the reservoir and the cylinder for the flow of hydraulic fluid from the reservoir to the cylinder as the piston moves toward the rest position, second check valve means in said return passageway means, and spring means for urging said piston toward its retracted position, the improvement:

wherein said body comprises

a main body member having an upper end and a lower end, an internal cylindrical opening adjacent the lower end and forming said cylinder and two external annular faces, one being adjacent said lower end and the other spaced from said lower end;

means across said lower end and forming said closed end;

a reservoir member having two, spaced, internal annular faces mating with said annular faces of said body member;

said members defining said reservoir which is at least partially between said mating faces, said body having O-ring grooves at said mating faces;

O-rings in said grooves and forming fluid seals at said mating faces; and

an upwardly facing annular seat, said spring means resting on said seat and extending upwardly therefrom;

comprising abutment means adjacent the distal end of the piston rod and secured thereto, the upper end of the spring means bearing against the abutment means; and

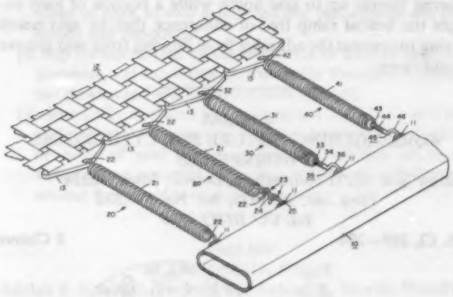
wherein said discharge passageway means extends upwardly from the cylinder to above the cylinder end of the piston and thence to said reservoir at an upper portion thereof.

4,162,063

ADJUSTABLE SPRINGS FOR TRAMPOLINES AND THE LIKE

George P. Nissen, and Harlan J. Kelly, both of Cedar Rapids, Iowa, assignors to Nissen Corporation, Cedar Rapids, Iowa

Filed Jan. 15, 1976, Ser. No. 649,508
Int. Cl.[2] A63B 5/18; F16F 1/12
U.S. Cl. 267—73 5 Claims



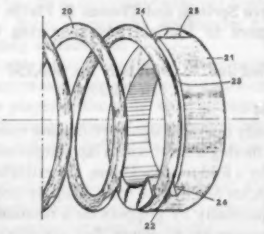
1. In a trampoline having a flexible bed spacedly surrounded by a frame, and a plurality of extensible helical spring assemblies resiliently suspending the bed relative to the frame, each spring assembly having a spring body with opposite axial ends, one of the ends having a first hook thereat engaging one of the bed and the frame, the other end having a second hook thereat engaging the other of the bed and the frame, the improvement wherein the second hook includes a shank portion extending axially into said spring body end and a hook portion disposed at the outer end of the shank portion, the shank portion being cylindrical and having an external helical thread extending axially along the cylindrical periphery of the shank portion; an anchor member at said spring body end having a bore therethrough axially of the spring and slidably receiving the shank portion; and a retaining member disposed within the spring body inboard of the inner axial end of the anchor member, the retaining member having a bore therethrough axially of the spring body with an internal helical thread complementary with and threadedly engaging the external thread of the shank portion.

4,162,064

LINEAR SPRING AND END THRUST MEMBER

Daniel A. Bouton, Vigneux; Jean E. Martoglio, Guignes Rabutin, and Jean-Pierre Maulat, Saint Maur, all of France, assignors to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation, Paris, France

Filed Feb. 8, 1978, Ser. No. 875,971
Claims priority, application France, Feb. 8, 1977, 77 04143
Int. Cl.[2] F16F 1/12
U.S. Cl. 267—177 3 Claims



1. Device for linearly converting a rectilinear displacement into a force and vice-versa, comprising: a helical compression spring having at each end a means holding the end loops

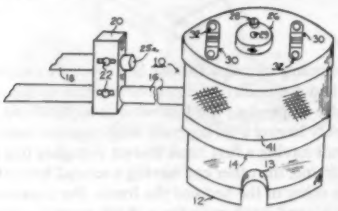
thereof stationary relative to each other, consisting of a helical groove machined in a cup which constitutes the support surface of the spring, characterized by the fact that a helical ramp, whose generatrix is rectilinear and perpendicular to the axis of the helix, extends from one end of the groove as an extension of one side thereof, a notch transverse to the ramp is provided in said ramp at its junction with the groove, and said spring has loops which fit within the helical groove and are adhesively adhered therein up to said notch while a portion of loop engages the helical ramp free of adherence thereto, said notch serving to prevent the adhesive from flowing from said groove to said ramp.

4,162,065

WORK HOLDING FIXTURE FOR CYLINDRICAL WORKPIECES

Andrew Rea, 10271 Nottingham, Detroit, Mich. 48224

Filed Jun. 20, 1978, Ser. No. 917,336
Int. Cl.[2] B23Q *3/00*
U.S. Cl. 269—294 **6 Claims**



1. A work holding fixture for cylindrical workpieces comprising a first member having a flat base and a cylindrical portion upstanding from said base, a horizontal V-groove formed in the upper end of said cylindrical portion, and a pair of clamps having fastening means for fastening to said cylindrical position, said clamps having cross-bars which span said V-groove for clamping cylindrical workpieces therein, vertical flats formed on opposite sides of said first member including the base and cylindrical portion thereof, said V-groove extending between said flats, said first member capable of being held via any of the three flats thereon for grinding cylindrical workpieces held in said V-groove, said first member also capable of being bolted via its base for milling cylindrical workpieces held in said V-groove, and a second member having a hollow cylindrical body which fits over and slides on the cylindrical portion of said first member, and aligned central apertures in said first and second members for carrying out a drilling operation on cylindrical workpieces held in said V-groove.

4,162,066

SIGNATURE MACHINES

William B. McCain, Hinsdale; James F. Cosgrove; John Vente, both of Western Springs, and Thomas R. Flavin, Mokena, all of Ill., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Filed Jun. 6, 1977, Ser. No. 803,750
Int. Cl.[2] B65H *39/02*
U.S. Cl. 270—54 **6 Claims**

1. In a cyclically operable signature feeding machine, where signatures each having a sheet with a lap margin and a short leg sheet attached by a fold to a backbone, are extracted in successive machine cycles one by one from a supply hopper and are transported sequentially by grippers on a rotatable extracting cylinder to a register gauge where they are released with the backbone adjacent the register gauge, whereafter each signature thus released is withdrawn from the register gauge and then opened, so its sheets are spread apart, by opposed grippers respectively carried by a rotatable lap cylinder and an opposed rotatable opening cylinder preliminary to dropping the opened signature in straddling relation on a saddle conveyor:

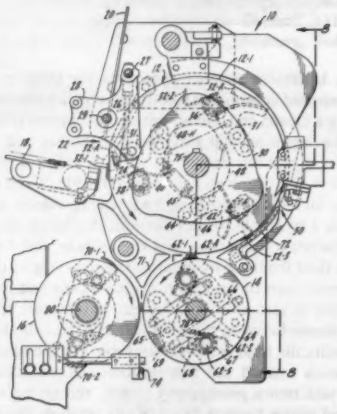
said extracting cylinder having three sets of grippers spaced equidistantly about and supported on the circumference thereof, and actuating means operable to open and close the grippers;

each of the lap and opening cylinders having two sets of grippers supported thereon and spaced approximately 180° apart, together with actuating means operable to open and close those grippers;

timing means for synchronizing operability of the second-named actuating means to the operability of the first-named actuating means so that as a set of grippers on the lap cylinder closes on the lap margin of a signature already released to the register gauge a set of grippers on the extracting cylinder has closed on the backbone of a signature extracted from the hopper and is transporting it to the register gauge;

extraction means for extracting the signatures from the hopper by applying negative atmospheric pressure thereto and, in timed relation, for releasing an extracted signature to a related gripper means on the extracting cylinder by applying atmospheric pressure; and

means connected to the extraction means to advance the time for both applying negative pressure and atmospheric



pressure when the machine cycles are repeated in a continuous run mode of the machine compared to discontinuous cycles when the machine is in a jog mode.

5. In a cyclically operable signature feeding machine, where signatures are extracted one by one from a supply hopper in successive machine cycles and are transported sequentially by gripper means on a rotatable extracting cylinder to a predetermined release point where they are released:

extraction means for extracting a signature from the hopper by communicating negative atmospheric pressure thereto at a predetermined time and for releasing the thus extracted signature to the gripper means on the extracting cylinder by next in time communicating to said extracted signature atmospheric pressure;

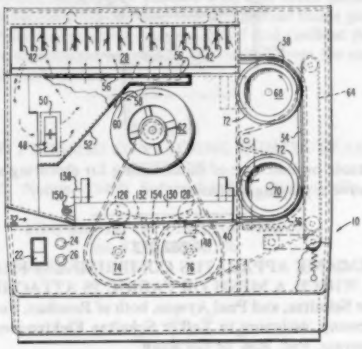
a pair of selectable mutually exclusive valve means respectively operable each to alternate communication of negative and atmospheric pressure to said extraction means at different times when the machine cycles are repeated in a continuous run mode of the machine compared to discontinuous cycles when the machine is in a jog mode, the time for application of negative pressure and atmospheric pressure in the continuous mode occurring sooner than the time for applying negative pressure and atmospheric pressure in the jog mode;

and a selector to select the respective valve means.

4,162,067
AIR ASSISTED AUTOMATIC DOCUMENT STACKING APPARATUS

Anthony Horak, Detroit; Felix A. Rachiatore, Rochester, and Christopher O. Lada, Ann Arbor, all of Mich., assignors to Burroughs Corporation, Detroit, Mich.

Filed Aug. 25, 1977, Ser. No. 827,588
Int. Cl.[2] B65H *29/38*
U.S. Cl. 271—177 9 Claims



1. Document stacking apparatus comprising an open document receiving receptacle;

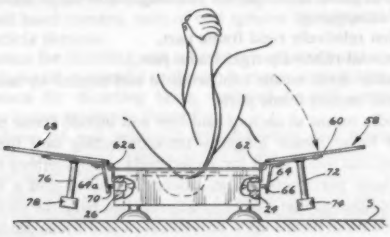
means for applying continuous positive air pressure to said receptacle to deflect a document out of the path of other documents entering said receptacle; and

means for producing conntinuous negative air pressure within said receptacle by withdrawing air from between the stacked documents effectively forcing said documents to closely bunch together within said receptacle.

4,162,068
DEVICE FOR ARM WRESTLING

Mark J. Berg, 1420 E. 6th St., Superior, Wis. 54880

Filed Aug. 1, 1977, Ser. No. 820,726
Int. Cl.[2] A63B *67/00*; A63F *9/00*
U.S. Cl. 273—1 E 6 Claims



1. A device for use in arm wrestling comprising:

(a) a substantially flat top base having a rectangular formation with parallel opposed first and second spaced depending side portions and parallel opposed first and second spaced depending end portions,

(b) a first wing member pivotally mounted at one end thereof to said first side portion of said base substantially centrally thereof and normal thereto,

(c) a second wing member pivotally mounted at one end thereof to said second side portion of said base substantially centrally thereof and normal thereto,

(d) a first switch carried by said first side portion in alignment with said first wing portion,

(e) a second switch carried by said second side portion in alignment with said second wing portion,

(f) a first flange connected to the underside of said first wing member in alignment with said first switch adapted to actuate said first switch when said first wing member is pivotally moved to a predetermined position,

(g) a second flange connected to the underside of said second wing member in alignment with said second switch adapted to actuate said second switch when said second wing member is pivotally moved to a predetermined position,

(h) means carried by the top of said base on which the elbows of each of two arm wrestling participants are positioned and supported,

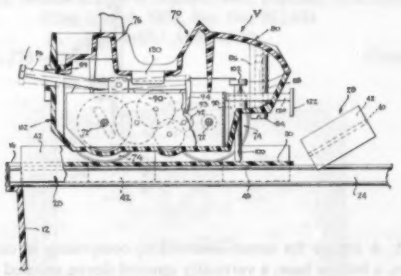
(i) stop means carried by the underside of each of said wing members and extending downwardly thereof for limiting the downward pivotal movement thereof,

(j) electrically operated indicator means carried by said base and connected to a source of power and actuated by either or both of said first and second switches when the switches are actuated by either or both of said first and second flanges of said wing members.

4,162,069
ACTION SKILL GAME

Adolph E. Goldfarb, Tarzana, and Delmar K. Everitt, Woodland Hills, both of Calif., assignors to Adolph E. Goldfarb, Northridge, Calif.

Filed Feb. 9, 1978, Ser. No. 876,420
Int. Cl.[2] A63F *9/00*
U.S. Cl. 273—1 R 37 Claims



1. A skill game comprising:

(a) support means having a starting end and including a pair of spaced apart generally parallel rails, extending generally longitudinally from said starting end,

(b) a plurality of planks sized to be positioned generally transversely on said spaced apart rails to form an object supporting surface extending longitudinally from said starting end, said planks having irregular edges where they are to be placed in relationship to a next adjacent plank, each irregular edge on each plank conforming to the irregular edge of at least no more than a few of said plurality of planks but which is capable of conforming to an irregular edge of at least one plank so that said planks may be placed in successive adjacent conforming relationships to form a generally continuous extension of said supporting surface, and

(c) a movable object capable of being propelled longitudinally across said object supporting surface at a speed such that the player of the game must attempt to lay the planks in conforming adjacent relationship starting from said starting end and before travel of the movable object is interrupted.

34. A method of playing a game of skill comprising:

(a) starting forward movement of an object along a roadway which is to be extended forwardly,

(b) selecting one of a plurality of planks to be placed generally transversely across a pair of spaced apart rails, which extend forwardly in alignment with the roadway, said planks having one or more spaced apart edges designed to

mate with edges of adjacently positioned planks, the selection being of a plank having an edge that will mate with the then forwardmost edge of the roadway,

(c) positioning the selected plank on the rails in mating relationship to that forwardmost edge, whereby said plank forms a forward extension of said roadway, said selection and positioning being attempted at a fast enough rate to extend the roadway before the moving object can be beyond said forwardmost end, and

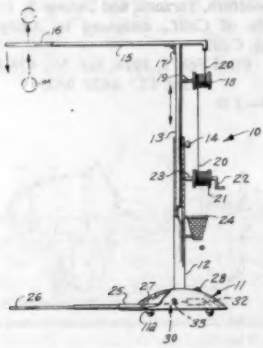
(d) repeating steps (b) and (c) until a determined goal is achieved or the object does go beyond said forwardmost end.

4,162,070

DEVICE FOR TENNIS INSTRUCTION

Barbara Georges, 1109 College View Dr., Monterey Park, Calif. 91754

Filed Mar. 30, 1978, Ser. No. 891,906
Int. Cl.[2] A63B *61/00*
U.S. Cl. 273—29 A **6 Claims**



1. A device for tennis instruction, comprising in combination, a hollow base, a vertically upward sleeve secured on said base, a tube slidably received in said sleeve, an upper portion of said tube extending outwardly of an upper end of said sleeve, a set screw threaded in a side of said sleeve bearing at its end against a side of said tube for selective securement together, a first arm having a hinge along a longitudinally intermediate portion thereof, said hinge being secured to an upper end of said tube, one end of said first arm having an eye into which a tennis ball is tossed by a player, and a mechanism connected to an opposite end of said first arm for pivoting said arm about said hinge.

4,162,071

GOLF TEE

Barry M Fish, and Alfred G. Ward, both of 8131 Yonge St., Thornhill, Ontario, Canada (L3T 2C6)

Filed Aug. 29, 1977, Ser. No. 828,485
Int. Cl.[2] A63B *57/00*
U.S. Cl. 273—33 **4 Claims**

1. An improved golf tee comprising a generally pyramidally shaped housing including a plurality of ascendant transparent generally triangular side walls, each of said side walls having first and second oblique edges adjoining another of said plurality of said walls, each of said plurality of said walls being uniformly bevelled below the upper vertex thereof and thereby defining a truncation in said housing, a fluted cylindrical member mounted on said truncation in said housing having an upstanding free end on which a golf ball may be removably mounted, a planar base member substantially parallel to said truncation therein, and a plurality of leg members releasably

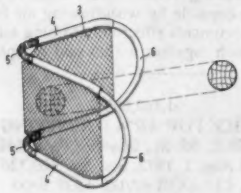
mountable on said base of said housing for elevating said housing above a playing surface.

4,162,072

BALL GAME APPARATUS COMPRISING A FRAME TO WHICH A MESH OR FABRIC IS ATTACHED

Volker Schultze, and Paul Ayasse, both of Renchen, Fed. Rep. of Germany, assignors to Volker Schultze Elektro-mechanische Apparate, Fed. Rep. of Germany

Filed Apr. 18, 1977, Ser. No. 788,541
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1976, 2638574
Int. Cl.[2] A63B *65/12*
U.S. Cl. 273—96 R **18 Claims**



1. Ball game apparatus for pitching, throwing or striking of balls, comprising:

a first relatively rigid frame part,

a second relatively rigid frame part,

flexible mesh means connected to and carried by said first and second frame parts,

handle means at each of said first and second frame parts,

and hinge means hingedly interconnecting said first and second frame parts for accommodating movement of said frame parts between an extended position and a kinked position so that a ball can be propelled from the surface of the mesh means upon movement of said frame parts from said kinked to said extended positions,

said hinge means including resilient means continuously biasing said first and second frame parts toward said extended position so that ball throwing movement of said frame parts is aided by said resilient means.

15. A method of pitching, throwing or striking balls with an apparatus of the type having:

a first relatively rigid frame part,

a second relatively rigid frame part,

flexible mesh means connected to and carried by said first and second frame parts,

handle means at each of said first and second frame parts,

and hinge means hingedly interconnecting said first and second frame parts for accommodating movement of said frame parts between an extended position and a kinked position so that a ball can be propelled from the surface of

the mesh means upon movement of said frame parts from said kinked to said extended positions,

said hinge means including resilient means continuously biasing said first and second frame parts toward said extended position so that ball throwing movement of said frame parts is aided by said resilient means; said method comprising:

manually moving said first and second frame parts to a kinked position against the force of said resilient means with a ball disposed in contact with said mesh means,

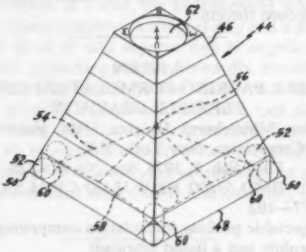
and subsequently moving said first and second frame parts to said extended position with the aid of said resilient means, with a consequent propelling of said ball from the surface of the mesh means.

4,162,073

HOLLOW PYRAMID CONTAINING INDICIA-BEARING SPHERES

Patrick H. Norris, 11470 Soforenko Dr., Jacksonville, Fla. 32218

Filed Jul. 15, 1977, Ser. No. 815,933
Int. Cl.² A63F *3/00*
U.S. Cl. 273—144 B **10 Claims**



1. A random choice means comprising:

a. a partially hollow pyramidal enclosure having an upper region and having a base having at least three basal corners, three of said corners being transparent;

b. a plurality of spheres enclosed within said pyramidal enclosure, said spheres sized such that not more than one of said spheres is capable of resting in each of the three said basal corners, each of said spheres having individual indicia thereon;

c. means for directing said spheres toward said basal corners when said pyramidal enclosure is at rest on said base, said means for directing being mounted to said pyramidal enclosure interiorly thereof,

so constructed and arranged that inverting said pyramidal enclosure causes said spheres to randomize at a position adjacent said upper region, and that subsequent re-inversion causes one of said spheres to come to rest in each of three said basal corners thereby exhibiting said indicia through said transparent basal corner.

4,162,074

GOLF PUTTER

William B. Thomson, 9132 Gettysburg Dr., Huntington Beach, Calif. 92646

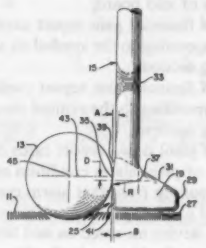
Continuation-in-part of Ser. No. 716,603, Aug. 23, 1976, abandoned. This application Jan. 21, 1977, Ser. No. 761,164
Int. Cl.² A63B *53/04*
U.S. Cl. 273—175 **6 Claims**

1. In a golf putter having a shaft and a head, an improved face on one side of the head for stroking a golf ball, comprising:

an elongate face surface;

an elongate convex striking surface protruding forwardly from said face surface, and extending generally horizontal therealong;

the extreme forward apex portion of said convex striking surface being disposed only slightly below the center of a standard size golf ball when the ball and head are resting on a typical putting surface on which the club is designed to be used and also when the putter head is held slightly above the putting surface; and



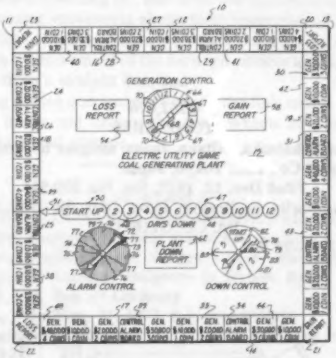
said convex surface having a generally arcuate portion of about 0.7 inches radius at said apex and transitioning to an upper surface generally tangent to said arcuate surface and disposed at about 3° to the vertical.

4,162,075

BOARD GAME INVOLVING ELECTRIC UTILITY PLANT OPERATIONS AND FINANCE

Albert H. Iannucci, 1522 W. Atlanta Ave., Phoenix, Ariz. 85041

Filed May 4, 1978, Ser. No. 902,831
Int. Cl.² A63F *3/00*
U.S. Cl. 273—256 **7 Claims**



1. A board game relating to the financial gains and losses associated with the operating of electric utility plants, said board game comprising:

(a) a playing board having four side edges and a playing surface;

(b) a plurality of marginally disposed playing sections arranged in alignment along each side edge of said board, at least one of said playing sections displaying a symbol indicative of a financial gain report, at least one of said playing sections displaying a symbol indicative of a financial loss report, at least one of said playing sections displaying a symbol indicative of a control board alarm, and the remaining ones of said playing sections displaying symbols indicative of various financial gains resulting from electric power generation;

(c) a plurality of special playing sections arranged in a line across the playing surface of said board such that none of said special playing sections is contiguous with any said marginally disposed playing sections, each of said special playing sections displaying a different symbol indicative

of a number of days down, with those symbols arranged in a numerical progression;

(d) a start up playing section interposed between, and contiguous with the numerically low end of said plurality of special playing sections and at least one of said marginally disposed playing sections that are arranged along one of the side edges of said board;

(e) a plurality of financial gain report cards each bearing a symbol corresponding to the symbol on said financial gain report playing sections;

(f) a plurality of financial loss report cards each bearing a symbol corresponding to the symbol on said financial loss report playing sections;

(g) a plurality of plant down report cards each identifying a different type of plant alarm condition and the number of days down resulting from that alarm condition;

(h) a plurality of playing pieces movable on said board;

(i) a first chance device mounted on said board for determining the number of said marginally disposed playing sections over which said playing pieces are movable;

(j) a second chance device mounted on said board for determining if a playing piece is to be moved onto said special playing section;

(k) a third chance device mounted on said board for determining the number of said special playing sections over which said playing pieces are movable; and

(l) at least one financial gain and loss scorekeeping means for recording the gains and losses.

4,162,076

TONE ARM

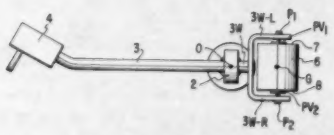
Hisayoshi Nakatsuka, Mitaka, Japan, assignor to Namiki Precision Jewel Co., Ltd., Tokyo, Japan

Filed Dec. 12, 1977, Ser. No. 859,541

Claims priority, application Japan, Mar. 30, 1977, 52-35621

Int. Cl.[2] G11B *3/14*

U.S. Cl. 274—23 R **9 Claims**



1. A tone arm for use in a phonograph record player having a base, said tone arm comprising

tone arm shaft having pick up means disposed at one end thereof and a balance weight disposed at the other end thereof, said tone arm shaft having a longitudinal axis extending between said ends thereof,

a tone arm shaft holder for pivotally mounting said tone arm shaft with respect to the phonograph record player base about a vertical axis, and

balance weight mounting means for pivotally mounting said balance weight with respect to said tone arm shaft about a balance weight axis which substantially intersects said longitudinal axis of the tone arm shaft and is spaced from said vertical axis about which the tone arm shaft pivots where the center of gravity of said balance weight lies substantially on said balance weight axis.

4,162,077

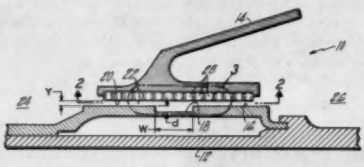
WIDE CHANNEL SEAL

David E. Crow, Glastonbury, Conn., and Nathan E. Harrison, Palm Beach Gardens, Fla., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 28, 1977, Ser. No. 865,267

Int. Cl.[2] F16J *15/44, 15/40*

U.S. Cl. 277—53 **7 Claims**



1. A seal structure of the type for impeding the leakage of a gaseous medium between the rotor and stator assemblies of a rotary machine wherein said structure comprises a cylindrical land having a honeycomb material adhered thereto and an opposing cylindrical land having a circumferentially extending groove disposed therein.

4,162,078

INJECTABLE PACKING FORMULATION CONTAINING FLEXIBLE GRAPHITE

Carl V. Cox, Middleburgh Heights, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Filed Feb. 1, 1978, Ser. No. 874,323

Int. Cl.[2] B65D *53/00;* E21B *33/00;* C10M *5/00, 7/00*

U.S. Cl. 277—102 **42 Claims**

1. An injectable packing formulation comprising particulate flexible graphite and a liquid lubricant.

4,162,079

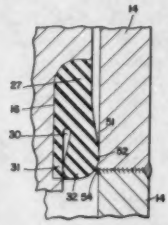
RESILIENT PACKING RING AND ASSEMBLY

Jerry G. Jelinek, La Habra, Calif., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Feb. 2, 1978, Ser. No. 874,438

Int. Cl.[2] F16J *15/32*

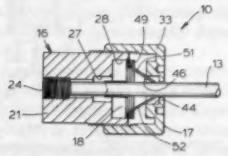
U.S. Cl. 277—205 **10 Claims**



1. A packing ring of resilient material, said ring having an unrecessed base portion at one end and having an annular recess extending axially inwardly from the other end thereof to form radially inner and outer lips, said recess having an axial length of less than one half of the overall axial length of said packing ring, said inner and outer lips having substantially equal axial lengths, said inner lip having substantially straight cylindrical axially extending inner and outer walls and having a substantially uniform radial thickness of less than one fourth of the radial thickness of said base, said outer lip having a maximum radial thickness of at least three times the radial thickness of the inner lip, said outer lip having a substantially straight inner wall and an outer corner at its free end that is

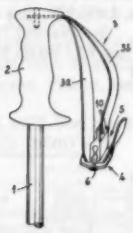
convexly curved on a radius equal to at least 50% of the maximum thickness of said lip.

4,162,080
DRILL CHUCK
James R. Buck, P.O. Box 125, Richland, Mich. 49083
Filed Nov. 4, 1977, Ser. No. 848,410
Int. Cl.[2] B23B *31/04, 31/12*
U.S. Cl. 279—1 DC 13 Claims



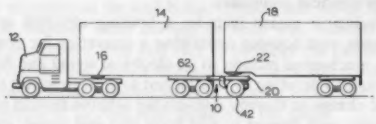
1. In a drill chuck having a rotatable housing means and tool holding means supported thereon and disposed for grippingly engaging the shank of a tool, the improvement wherein said tool holding means comprises a support ring and a plurality of resilient arms fixed to said support ring in angularly spaced reltionship and projecting radially inwardly therefrom, said arms having surface means on the inner free ends thereof adapted for gripping engagement with the tool shank, said support ring being of a laminated construction and formed from a plurality of ringlike washers which are axially stacked and fixedly connected together, and at least some of said washers having said resilient arms fixedly and integrally connected thereto.

4,162,081
SAFETY RELEASE HAND LOOP FOR SKI POLE
Claude Joseph, 60 Avenue de Geneve, Sallanches, (Haute Savoie), France
Filed Feb. 9, 1978, Ser. No. 876,210
Claims priority, application France, Feb. 10, 1977, 77 04302
Int. Cl.[2] A63C *11/22*
U.S. Cl. 280—11.37 H 9 Claims



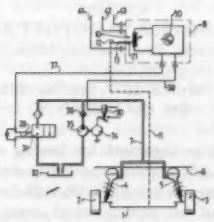
1. In combination with a ski pole, a hand loop comprising:
a pair of flexible straps each having a free end and an opposite end secured to said pole;
a buckle formed with a pair of openings through which one of said free ends extends and having a projecting holding formation, said buckle being slidable and positionable along said strap having said one free end for adjustment of said loop; and
a clip on the other of said free ends having an elastically deflectable portion defining a recess in which said formation is snugly engageable, whereby on pulling-apart of said free ends said formation of said buckle can elastically deform said portion and pull out of said recess.

4,162,082
SELF-STEERING DOLLY
Norman R. Curry, Mississauga, Canada, assignor to Auto Steering Trailers Limited, Oakville, Canada
Filed Jul. 13, 1978, Ser. No. 924,296
Int. Cl.[2] B62D *53/00*
U.S. Cl. 280—81 A 5 Claims



1. A transport dolly for releasable tandem connection of a rearward vehicle to a forward vehicle comprising:
a dolly frame;
means at the forward end of the dolly frame for releasably rigidly connecting the dolly frame to the frame of the forward vehicle by which the dolly and the rearward vehicle are to be towed;
a fifth wheel connection mounted on the dolly frame to releasably receive the front end of the rearward vehicle;
a dolly axle;
a spring suspension connected to the dolly frame and the dolly axle and mounting the dolly axle to the dolly frame;
two stub axles mounted by king pins on the dolly axle at respective ends thereof for steering pivoting movement about respective king pin axes;
two road wheels mounted respectively by the stub axles and on which the dolly runs;
link means connecting the stub axles for simultaneous pivoting steering movement about their respective axes under the effect of sideways-directed forces applied to the road wheels by movement of the forward vehicle as it is steered away from a straight line; and
centering means connected between the link means and the dolly frame and urging the road wheels to a centered straight ahead attitude.

4,162,083
LEVELING CONTROL FOR MOTOR VEHICLES
Erich Zabler, Karlsruhe; Heiner Gassmann, Esslingen; Steffen Schneider, Moglingen, and Steffen Straub, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany
Filed Sep. 23, 1977, Ser. No. 836,886
Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646547
Int. Cl.[2] B60G *11/26*
U.S. Cl. 280—703 10 Claims



1. A leveling system for a vehicle which includes a chassis and a body, said system including:
a source of hydraulic fluid under pressure;
a leveling means connected between said chassis and said body of said vehicle to raise and lower the body with

respect to said chassis by hydraulic pressure supplied by said source of hydraulic pressure;

indicator means, including linkage between said chassis and said body to provide a signal related to the relative vertical distance therebetween; and

electronic circuit means including damping means for processing and damping said signal and for controlling said leveling means in dependence thereon, and wherein the improvement comprises:

said indicator means includes a housing attached to said chassis, said housing containing a converter for converting mechanical motion to an electrical signal and further includes a pivoting lever attached to said converter and to said chassis to thereby convert the relative motion of said chassis with respect to said body into said signal; and

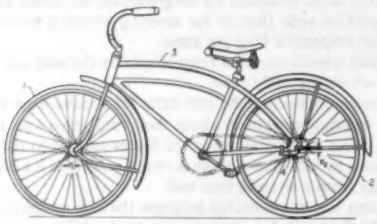
said leveling means includes at least one solenoid valve, controlled by said electronic circuit means in dependence on said damped signal.

4,162,084

EXERCISING BICYCLE

Stanley J. Mikina, Berna-Knoll 21, Rte. 2, Hendersonville, N.C. 28739

Filed Jan. 27, 1978, Ser. No. 873,007
Int. Cl.[2] B62K *17/00* B62L *1/10*
U.S. Cl. 280—229 **1 Claim**



1. A bicycle adapted for foward travel and equipped with circular wheels having concentric circular hubs, eccentrically mounted axles on said hubs whose axles are displaced radially from the geometric wheel centers for the purpose of imparting a sinusoidal vertical oscillation to said axles and attached bicycle frame and its rider, these oscillations to be superposed on and to be the result of the forward motion of the bicycle, a caliper brake including movable shoes mounted so as to surround a perimetrical portion of one of said wheels, and an auxiliary rim mounted on the rim of said wheel having a braking track concentric with said wheel axles for frictional engagement by said shoes.

4,162,085

SWINGABLE TRANSPORT BAR

Thomas D. Miranowski, Breckenridge, Minn., assignor to Frontier, Inc., West Fargo, N. Dak.

Filed Nov. 25, 1977, Ser. No. 854,823
Int. Cl.[2] B60D *1/14*
U.S. Cl. 280—412 **5 Claims**

1. A connector arrangement for towing of vehicles by a towing vehicle in a first operative position and a second travel position, said connector arrangement including:

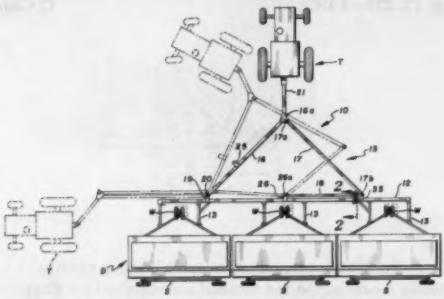
a. an attachment bar arranged and constructed to extend generally transversely across a frontal portion of the article to be towed;

b. a first link member of a first longitudinal dimension, said first link member having a first and a second end, said first end being pivotally attached to said attachment bar;

c. a second link member of a first longitudinal dimension, said second link member having a first and second end, said first end thereof being pivotally attached to said second end of said first link member;

d. a third link member of a second longitudinal dimension, said third link havng a first and second end, said first end thereof being pivotally attached to said attachment bar and said second end being pivotally attached to said second end of said second link member.

e. said dimensions of said links and the positions of attachment therefore providing a connector arrangement of a



triangular configuration in a first operative towing position and a configuration wherein said attachment bar and said first and second link members are arranged in side by side relation to provide a travel position; and

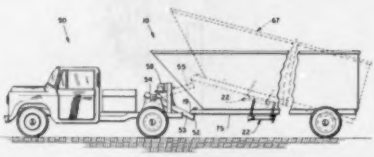
f. connector means provided for releasably connecting one of said links to said attachment bar for maintaining said links in a triangular configuration for operative towing and for releasably connecting a second of said links to maintain said first and second links in said side by side relation.

4,162,086

TRAILER APPARATUS AND GROUND SUPPORT THEREFOR

Ronald L. Bond, Valdosta; E. Chris Daughdrill, Lake Park; Henry T. Brice, Valdosta, all of Ga., and Phineas E. Horton, III, Portsmouth, Va., assignors to Swacars Sales, Inc., Valdosta, Ga.

Division of Ser. No. 611,133, Sep. 8, 1975, Pat. No. 4,054,301, which is a continuation-in-part of Ser. No. 480,606, Jun. 19, 1974, abandoned, which is a continuation of Ser. No. 377,752, Jul. 9, 1973, Pat. No. 3,858,939. This application Oct. 13, 1977, Ser. No. 841,722
Int. Cl.[2] B62D *53/06*
U.S. Cl. 280—425 R **2 Claims**



1. A vehicular system in which a towing vehicle is selectively and interchangeably connectable to support and tow any one of a number of trailers;

each said trailer comprising coupling means located at the forward end of the trailer;

traveling wheel means located rearwardly of said hitch means;

and ground support means located forwardly of said traveling wheel means;

said ground support means being selectably disposable in a ground contacting position to support said forward end of a trailer at predetermined elevation above the ground when the trailer is disconnected from a towing vehicle;

said towing vehicle having a hitch means selectably connectable to said coupling means of said trailer;

said towing vehicle further comprising support means for said hitch means, said support means being selectably movable in a substantially vertical direction either to a lower position whereat said hitch means is below and disconnected from said trailer coupling means while the forward end of said trailer is supported by said ground support means, and an upper position whereat said hitch means engages said trailer hitch means and elevates said trailer front end sufficiently to permit said ground support means to be elevated from ground contact;

a said ground support means comprising support member selectively movable into downwardly depending position for contact with the ground;

locking means interconnecting said support member with said trailer, said locking means being selectively operative to lock said support member in said depending position and being operative in resopnse to elevation of said trailer above said predetermined elevation to unlock said support member;

means defining a socket for selectively receiving a mating portion of said support member to retain said support member in said downwardly depending position;

said locking means comprising a lost motion connection which permits said support member, when in downwardly depending position, to undergo a limited extent of motion with respect to said socket as said trailer is raised or lowered with respect to said predetermined elevation, so that said support member is locked into said downwardly depending position by said socket when said trialer is lowered to said predetermined elevation for ground support by said support member;

support moving means operatively connected to said support member for moving said unlocked support member upwardly to a raised position out of ground contact;

said support moving means comprises a crank supported on said trailer and having a crank arm extending alongside said support member;

means operatively interconnecting said crank arm and said support member to permit said downwardly depending support member to undergo said limited extent of motion; and

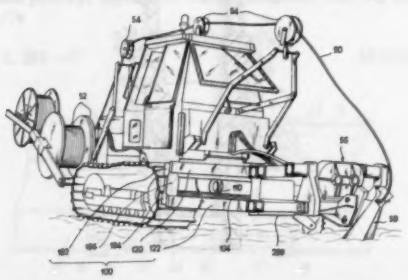
operating means associated with said crank to rotate said crank so that said crank arm moves said unlocked support member upwardly to said raised position.

4,162,087

SELF-PROPELLED TRANSLATABLE WORKING UNIT FOR TRACTOR VEHICLE

Jean-Claude Avrillon, Vierzon, France, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 26, 1977, Ser. No. 845,759
Int. Cl.[2] B60D 7/00
U.S. Cl. 280—460 A **7 Claims**



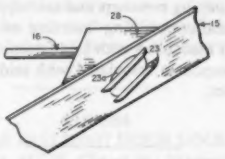
1. In a tractor vehicle, a working unit adapted to be mounted thereon comprising an assembly support provided with at least one guide, said assembly support having a rack extending parallel to said one guide, said support provided with at least two bearings which are pivotally mounted to said vehicle for pivotal movement of said support about a transverse horizontal axis, lugs mounted on said support and pivot cylinders mounted between said vehicle and said lugs to control the pivoting of said support about said transverse horizontal axis, a tool-holder chassis mounted to slide on the guide, a hydraulic motor mounted on the tool-holder chassis, said motor having a vertical rotating shaft driving at least one toothed pinion which cooperates with said rack to provoke the displacement of the tool-holder chassis along the whole of said guide, locking means adapted mechanically to lock the tool-holder chassis at all points of its path with respect to the guide.

4,162,088

POWERED SNOW SKI

Gordon K. Best, 1809 "H" St. SE. #10, Auburn, Wash. 98002, and Dennis O. Best, P.O. Box 14, Springdale, Wash. 99173

Filed Mar. 20, 1978, Ser. No. 887,998
Int. Cl.[2] B62M 27/02
U.S. Cl. 280—606 **4 Claims**



2. A powered snow ski comprising, in combination:

an elongate ski body defining a steering shaft hole in the forward medial part and a drive belt slot in the rearward medial part;

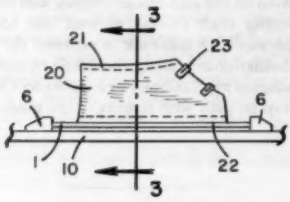
a steering mechanism having two thin, spaced, parallel rudders with substantial areal surface in a vertical plane depending from a thin rudder plate having its principal areal surface in a horizontal plane substantially parrallel to the ski body and perpendicular to the rudders, the rudder plate being irrotatably carried immediately below the ski body by a rudder control arm journaled in the steering shaft hole, with an elongate steering column irrotatably communicating with the rudder control arm by a universal joint and extending upwardly and rearwardly therefrom to support a handle bar at its upper end above the medial part of the ski body;

a driving mechanism housing, carried by the ski body to define a chamber above the drive belt slot, journaling paired opposed drive belt rollers in the forward and rearward parts of the chamber, said drive belt rollers carrying therebetween an endless drive belt with a portion of its peripheral surface depending through the driving belt slot and below the ski body to operatively communicate with an underlying supportative surface;

a motor carried by the upper part of the driving mechansim housing; and

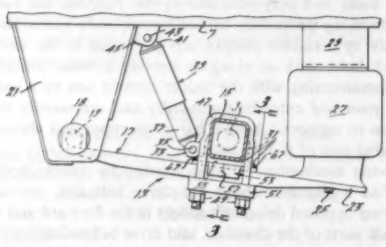
mechanical linkage operatively interconnecting the motor with at least one belt roll of the endless drive belt to transmit motion of the motor to the drive belt to cause locomotion of the ski body over an underlying supportative surface.

4,162,089
SKI BINDING
Franz Alber, Nordwestbahnstr. 15/10, Vienna, Austria (A 1020)
Filed Oct. 3, 1977, Ser. No. 838,894
Claims priority, application Austria, Oct. 4, 1976, 107360/76
Int. Cl.[2] A63C 9/00
U.S. Cl. 280—618 9 Claims



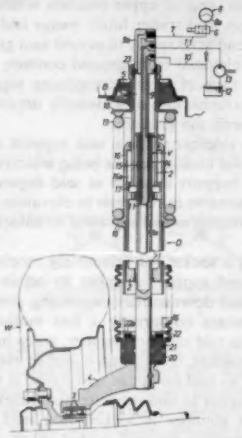
1. A combined ski boot and ski binding comprising:
(a) a ski boot having a lower portion made of pliant material integral with an upper portion made of rigid material;
(b) a ski binding having:
(1) a sole plate adapted to be releasably connected to the top surface of a ski with side edges of the sole plate extending generally parallel to the longitudinal axis of the ski;
(2) fastening members hingedly connected to the side edges of the sole plate; and
(c) cooperating fastening means for releasably interconnecting said fastening members and said upper portion of said ski boot, said cooperating fastening means having a first component associated with said fastening members and a second component associated with said upper portion of said ski boot.

4,162,090
VEHICLE AXLE SUSPENSION ASSEMBLY
Robert B. Schwartz, Grosse Pointe Wds., Mich., assignor to Fruehauf Corporation, Detroit, Mich.
Filed Mar. 6, 1978, Ser. No. 883,371
Int. Cl.[2] B60G 11/00
U.S. Cl. 280—688 5 Claims



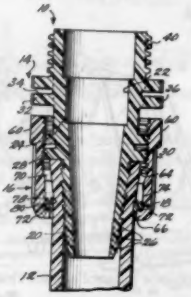
1. In a vehicle axle suspension assembly comprising a trailing arm, a locator plate adapted to be welded to an axle section, said locator plate having an interference fit on said arm and being substantially rigid with said arm, said plate being U-shaped in cross section with the legs of the U engaged with and conforming to the sides of the arm, the sides of the arm have convex shoulder means facing away from said plate and the legs of said plate extending overcenter so as to be mechanically locked behind the shoulder means, whereby said arm is substantially free of welding stresses.

4,162,091
WHEEL SUSPENSION APPARATUS FOR A VEHICLE
Shoichi Sano, Tokorozawa, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Dec. 7, 1977, Ser. No. 858,459
Claims priority, application Japan, Dec. 14, 1976, 51-150230
Int. Cl.[2] B60G 11/26
U.S. Cl. 280—702 6 Claims



1. A wheel suspension apparatus for a vehicle comprising a hydraulic damper disposed between the body and a wheel of the vehicle and including an inner cylinder and an outer cylinder slidably fitted thereover to define a main hydraulic chamber; an auxiliary cylinder slidably fitted over the outer peripheral surface of said outer cylinder to define an auxiliary hydraulic chamber therebetween in communication with said main chamber, said auxiliary cylinder being urged in one axial direction under the hydraulic pressure in said auxiliary chamber; and a suspension coil spring disposed under compression between said auxiliary cylinder and said outer cylinder for resiliently biasing the former in the other axial direction.

4,162,092
HOSE COUPLING
Jerry R. Hayes, Peoria, Ill., assignor to L. R. Nelson Corporation, Peoria, Ill.
Filed Oct. 6, 1977, Ser. No. 839,996
Int. Cl.[2] F16L 35/00
U.S. Cl. 285—39 15 Claims



1. Apparatus for a re-usable attachment to garden hoses in a wide range of sizes to provide a conventional hose fitting on an end thereof, said apparatus comprising:

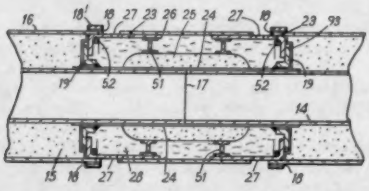
(1) a tubular shank member molded of plastic material, said shank member having
(a) an opening extending interiorly therethrough which is frustoconical at one end portion thereof,
(b) a series of hose engaging ring sections on the exterior of said one end portion extending therefrom toward the opposed end thereof, the diameter of each ring section extending from said one end portion exceeding the diameter of the preceding ring sections,
(c) a threaded section on the exterior of said shank member adjacent the ring section of largest diameter, said threaded section having a diameter in excess of the diameter of said adjacent ring section,
(d) a gripping section on the exterior of said shank member spaced from said threaded section, said gripping section extending radially outwardly beyond the periphery of said threaded section, and
(e) a fitting on the end of said shank member opposite from said one end portion thereof,
(2) a tubular collar member molded of plastic material, said collar member having
(a) exterior gripping surfaces,
(b) an interior threaded section in one end portion of a size to engage the exterior threaded section on said shank member,
(c) an interior radially inwardly directed annular flange on the other end portion having an interior diameter greater than the diameter of the largest ring section on said shank member, and
(d) an interior generally cylindrical surface extending between said threaded section and said annular flange having a diameter size intermediate the interior diameter size of said threaded section and said annular flange, and
(3) a plurality of annular sizing members molded of plastic material, each of said sizing members comprising a split ring having
(a) an outer section of an exterior size to fit within said collar member in surface-to-surface engagement with the interior cylindrical surface of said collar member and an axially inwardly facing surface of the flange thereof, the exterior size of the outer section of each sizing member being the same, and
(b) an inner section of an interior size to engage the exterior of an end portion of a hose the interior of which is engaged over a plurality of the ring sections on the exterior of said shank member, the interior size of the inner section of each sizing member being less than the interior diameter size of said flange and different from one another.

4,162,093

HEAT-INSULATED PIPE-LINES

Frantisek Sigmund, 19 rue du Calvaire, 92210 Saint-Cloud, France

Filed Jun. 13, 1977, Ser. No. 806,288
Claims priority, application United Kingdom, Jun. 14, 1976, 24605/76
Int. Cl.² F16L *59/16*
U.S. Cl. 285—47 **24 Claims**



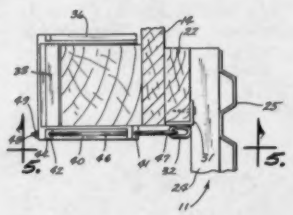
1. A heat-insulated joint between two heat-insulated pipe units, each of said pipe units comprising:
a pipe,
an outer jacket of fluid-impervious material surrounding said pipe in coaxially spaced relationship therewith, and a filling of expanded heat-insulating material provided between said pipe and said outer jacket and extending over the greater part of the length of said pipe,
the end parts of said pipe projecting beyond the corresponding ends of said filling and the end parts of said outer jacket projecting likewise but for a shorter distance, so that annular recesses are formed in the ends of the pipe unit,
and said heat-insulated joint comprising:
means interconnecting proximate projecting end parts of the pipes of said two pipe units,
annular seals of rubberlike material located in the annular recesses in the proximate ends of the two pipe units,
each annular seal having an outer circumferential portion lying in contact with the radially inner surface of the projecting end part of the jacket of the respective pipe unit and an annular portion supported by at least the radially outer part of the end face of the filling of the respective pipe unit,
a tubular cover extending across the gap between the proximate end parts of the jackets and having its ends joined to the outer circumferential portions of said annular seals, and
a further expanding filling of heat-insulating foam material within the annular space enclosed by the seals and the cover and surrounding the interconnected pipe end parts,
the outer circumferential portions of the annular seals being held by said further filling in fluid-tight sealing contact with the radially inner surfaces of the projecting jacket end parts and the annular portions of the annular seals being pressed by said further filling in fluid-tight sealing relation toward the end faces of the corresponding pipe units.

4,162,094

POLE BUILDING DOOR LOCK

Donald D. Williams, 415 W. Chapel St., Marengo, Ill. 60152

Filed Nov. 7, 1977, Ser. No. 848,945
Int. Cl.² E05C *19/18*
U.S. Cl. 292—288 **3 Claims**



1. A lock assembly and a door having a frame defining a doorway and including an upright post of a rectangular shape in transverse cross section at one side of the doorway, said lock assembly comprising:
(a) a clamp member of a U-shape and of a size to receive said post therein,
(b) said post having a first side remote from the door, a second side opposite said first side, a third side facing the doorway and a fourth side opposite said third side,
(c) said clamp member having a base section and a pair of leg sections to receive the post member in a straddling relation therebetween with the base section opposite said first side, with the one of said pair of leg sections opposite said third side having a hook portion projected laterally outwardly from said second side when the base section is in engagement with said first side,
(d) a hook portion connecting member, and

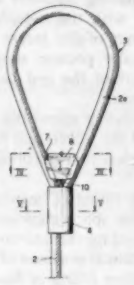
(e) means for securing said connecting member on the inner surface of the door such that when the door is in a doorway closing position, said hook portion is connectible with said connecting member to hold the base portion in engagement with said first post side.

4,162,095

CABLE SLINGS

Jean-Francois Archer, Villennes, France, assignor to Stas - Societe Technique d'Accessoire Specialises, Sartrouville, France

Filed Apr. 29, 1977, Ser. No. 792,229
Claims priority, application France, May 13, 1976, 76 15160
Int. Cl.[2] B66C *1/18*
U.S. Cl. 294—74 **7 Claims**



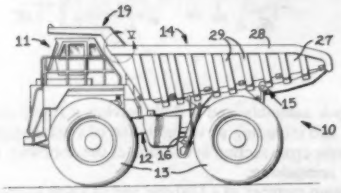
1. The cable combination which comprises a cable sling formed by a cable of which at least one end is folded back in such a manner as to form a loop and a sleeve retaining the said end of the cable, the loop having a crotch adjacent said sleeve, a marking plate comprising a stirrup member which is threaded onto the end of the loop adjacent to the sleeve, and a retaining cable operative to secure the stirrup member to the sleeve, said retaining cable being folded back to provide two ends, said two ends of the retaining cable being imprisoned in the sleeve.

4,162,096

MODULAR TRUCK BODY

Bernard E. Proeschl, Decatur, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 10, 1977, Ser. No. 850,433
Int. Cl.[2] B62D *27/00*
U.S. Cl. 296—196 **9 Claims**



1. A modular truck body disposed on a longitudinal axis thereof comprising

a unitary first module having a generally L-shaped cross section to define a generally vertical first side section and a generally horizontal first bottom section,

a unitary second module having a generally L-shaped cross section to define a generally vertical second side section spaced laterally from said first side section and a generally horizontal second bottom section having a lateral width substantially less than the lateral width of said first bottom section, said first and second bottom sections separated from each other by a separation line extending longitudinally the full lengths thereof and which is laterally disposed in substantial offset relationship relative to the longitudinal axis of said truck body, and

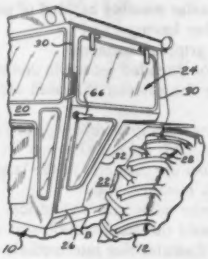
securing means extending along said separation line and securing said first and second bottom sections together, said securing means comprises a plurality of longitudinally spaced releasable fastening means detachably securing said first and second modules together at said separation line.

4,162,097

VEHICLE CAB STRUCTURE

Frank F. Scribner, Stout, Iowa, assignor to Royal Industries, Inc., Waterloo, Iowa

Filed Nov. 15, 1976, Ser. No. 742,689
Int. Cl.[2] E05D *15/28*; B60J *1/00*
U.S. Cl. 296—190 **5 Claims**



1. A vehicle construction comprising:

a vehicle frame;

spaced apart wheels on said frame;

an operator cab mounted on said frame between said wheels and having an access opening with opposed sides and closeable by an access door with generally vertically extending sides and adjacent to one of said wheels, said door having a lower extremity below the uppermost extent of said one wheel and a relief in one side thereof and at said lower extremity;

a generally horizontally directed link within said cab having one end pivoted to said cab at a location intermediate said opening sides and an opposite end pivoted to said door on the interior surface thereof between said door one side and said intermediate location; and

a horizontally slidable connection between said door adjacent said door one side and said cab;

whereby when said door is opened, said door will be rotated and translated to allow said lower extremity to clear said one wheel.

4,162,098

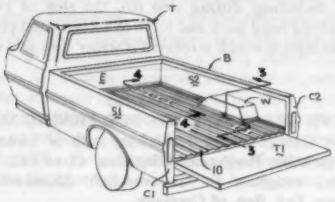
PROTECTIVE LINER FOR PICKUP TRUCKS

Sam M. Richardson, III, P.O. Box 1582, El Dorado, Ark. 71730

Filed Jun. 13, 1977, Ser. No. 806,097
Int. Cl.[2] B62D *33/00*
U.S. Cl. 296—39 R **12 Claims**

1. A protective liner for a pickup truck bed comprising a one-piece plastic member having a pair of opposite longitudinal edge portions and a pair of opposite transverse edge portions, said longitudinal edge portions having relieved areas adapted to receive wheel wells of the pickup truck bed, a plurality of generally parallel upwardly projecting lands and upwardly opening valleys disposed longitudinally of said member, a first short upstanding sidewall bordering one of said transverse edge portions, second and third short upstanding sidewalls bordering said longitudinal edge portions, said first through third sidewalls merging with respective first through third terminal bordering edges adapted to be contiguously

disposed relative to an inner body wall of the pickup truck bed, each of said bordering edges being defined by a first horizontal wall merging with each short upstanding sidewall, a downwardly directed wall merging with each first horizontal wall, and an outwardly directed second horizontal terminal wall merging with each downwardly directed wall.



4,162,099

MOTOR-DRIVEN VEHICLE, ESPECIALLY FOR USE IN MINING OPERATIONS

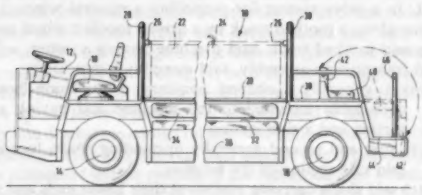
Jörg Schopf, Stuttgart, Fed. Rep. of Germany, assignor to Schopf Maschinenbau GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 18, 1977, Ser. No. 816,663

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1976, 2632246

Int. Cl.² B62D *33/00*

U.S. Cl. 296—63 **6 Claims**



1. A self-propelled, motor-driven, steerable vehicle having a vehicle body with at least two axles and substantially parallel longitudinal boundaries, for selectively transporting material and personnel, especially for use in underground mining operations, comprising: a plane, substantially uninterrupted loading platform for the material to be transported, two benches or seat rows for transporting persons, said benches or rows being arranged below the loading platform opposite each other and respectively parallel to the longitudinal boundaries of the vehicle, said loading platform having parts respectively covering each bench or seat row, and means pivotally connecting said loading platform parts at said vehicle body so as to be respectively pivotable upwardly about an axis extending in the longitudinal direction of the vehicle substantially parallel to said longitudinal boundaries, and means for locking said parts in their upwardly pivoted position, said bench or seat rows having back rests facing towards said longitudinal axis of the vehicle and having seat surfaces arranged offset with respect to said longitudinal boundaries inwardly towards said longitudinal axis of said vehicle so far that within the longitudinal vehicle boundaries a space is left, and a foot rest arranged at a suitable height for the persons to be transported and arranged in said space, said means for pivotally connecting said loading platform parts at the vehicle body being provided in the area of their adjacent, inner longitudinal edges facing away from the outer longitudinal boundaries of the vehicle.

4,162,100

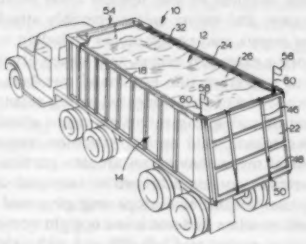
COVER ASSEMBLY FOR OPEN BOXES OF VEHICLES

Pasquale Muscillo, 1715 Britannia Rd. E., Mississauga, Ontario, Canada (L4W 2A3)

Filed Apr. 7, 1977, Ser. No. 785,456

Int. Cl.² B60P *7/04*

U.S. Cl. 296—100 **8 Claims**



1. A cover assembly for open boxes of vehicles, where the open box has a bottom, side walls and end walls, and where a load of particulate, granular of lumpy material is to be carried in said open box, comprising:

(a) a pair of substantially rigid guide means mounted in said box along each of said side walls near the top edge thereof;

(b) a cover of flexible material having a width at least equal to the width between said guide means and a length substantially equal to the length of said box secured at a first end of said box in the upper portion thereof, said flexible material being secured at least at the corners thereof closest to said first end of said box;

(c) a plurality of guidable means secured along each edge of said flexible material and engaging said guide means;

(d) means for securing the end of said flexible material remote from said first end of said box when said flexible material is extended along the length thereof; and

(e) indicator means secured at the corners of said flexible cover remote from the corners secured at said first end, so as to indicate the position along each side wall of said box where a respective corner and indicator means may be located at any time.

4,162,101

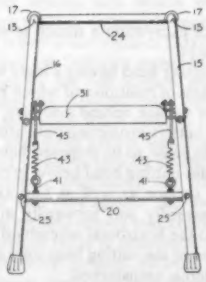
WALKER FOR INVALID PERSONS

John E. McCague, Sr., and Elinor M. McCague, both of 3236 E. Lester, Tucson, Ariz. 85716

Filed Sep. 8, 1977, Ser. No. 831,373

Int. Cl.² F16M *13/08*; A61H *3/00*

U.S. Cl. 297—6 **1 Claim**



1. A walker for invalid persons comprising a right side, a left side, a front side, and seat means interiorly to said right, left, and front sides; said left side and said right side each comprising an "A" frame structure having two spaced apart upright

members and at least two horizontal members; said front side comprising one member each of said right side and said left side upright members and at least two horizontal members, said horizontal members attached to said left side and right side upright members; said seat means including a seat, upright lever means attached at right angles to said seat and on opposite sides thereon between said seat and said left and right side upright member, a plurity of stops, and pivotal means, said pivotal means attached to said upright lever means and said front side means; and spring means operably attached to said upright lever means, said spring means including a spring and elongated spring extension means, said spring attached at one end to one of said front side horizontal members and at the other end to one end of said elongated spring extension means, the other end of said spring extension means attached to said upright lever means, said spring extension means defining elongated metal means having an arcuate portion cut therefrom, said arcuate portion arranged to surround on one side said seat pivotal means; said stops engaging said front side vertical members when said seat is in a upright vertical position and said stops engaging said left side and said right side horizontal members when said seat is in a horizontal position; and said left side and right side vertical members are provided with rubber feet and said left side and right side cross-member is provided with rubber grips whereby when said seat is down, said upright lever, the spring means, and pivotal means are in a substantially straight vertical line and when said seat is not being used and pivots upward, it will be substantially in line with the fron siade interiorly to said right, left and front sides and provide maximum interior space for the person walking to walk in.

4,162,102

METHOD AND DEVICE FOR LOOSENING STONY SOIL

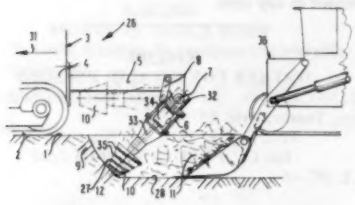
Joannes A. Rooymans, Muiderberg, Netherlands, assignor to Ballast-Nedam Groep N.V., Amstelveen, Netherlands

Filed May 19, 1977, Ser. No. 798,674

Claims priority, application Netherlands, May 26, 1976, 7605721

Int. Cl.[2] E02F *5/04*

U.S. Cl. 299—10 **8 Claims**



1. The method of excavating a trench in stony soil, which comprises the steps of:

(a) providing a cutting head having a body which is symmetrical about an axis of rotation and which has a forward end face and a side surface behind said face, and at least one helical row of cutters projecting outwardly from said side surface so as likewise to be disposed behind said face;

(b) positioning said cutting head below ground surface such that said side surface as well as said axis of rotation is inclined downwardly and forwardly at an acute angle with respect to the horizontal whereby during subsequent forward motion of the cutting head only said face contacts stony soil which is undisturbed;

(c) plowing said cutting head forwardly along a horizontal path through the soil so that said face breaks up the undisturbed soil which it contacts ahead of said cutters, and simultaneously rotating said cutting head about said axis whereby said cutters further break up the soil and mound it upwardly in loosened state within a trench defined along the plowing path of the cutting head;

subsequently removing the loosened soil from within the trench;

and including, during step (c), the step of swinging said cutting head back and forth in a horizontal plane whereby the trench which is formed is wider than said cutting head.

4,162,103

DRIVE ARRANGEMENTS FOR MINING MACHINES

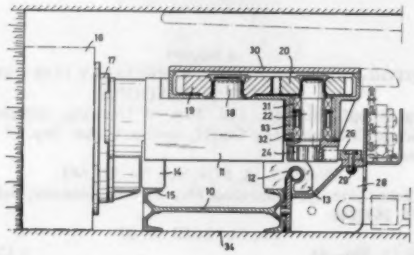
Werner Georg; Walter Heberling, both of Lünen, and Fritz Borgschulte, Bergkamen-Oberaden, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lünen, Fed. Rep. of Germany

Filed May 10, 1977, Ser. No. 795,655

Claims priority, application Fed. Rep. of Germany, May 25, 1976, 2623340

Int. Cl.[2] E21C *29/02*

U.S. Cl. 299—43 **17 Claims**



1. In a drive system for propelling a mineral winning machine along a toothed track by a driven toothed wheel engaging said toothed track, said machine having a cutter, a body and transmission assembly, said assembly comprising:

(a) a generally L-shaped auxiliary transmission housing detachably mounted to the machine and having a top section and a side section,

(b) first and second generally upstanding shafts located in said side section of the housing,

(c) said shafts carrying pinions at their lower ends and gearwheels at their upper ends,

(d) both said pinions being effective to mesh with said track,

(e) bearings for rotatably mounting the shafts, and

(f) a detachable drive gearwheel located in said top section and mounted on a drive shaft of separate drive means and directly meshing with the gearwheels at the upper ends of the shafts within the top section of the housing,

(g) said auxiliary transmission being removably disposed as a unit from said body.

4,162,104

CUTTING MACHINE

Peter Kogler, Knittelfeld, and Alfred J. Zitz, Zeltweg, both of Austria, assignors to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft, Vienna, Austria

Filed May 24, 1977, Ser. No. 799,937

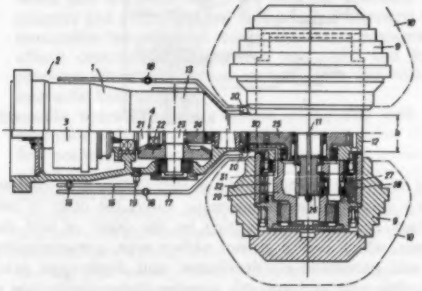
Claims priority, application Austria, May 25, 1976, 3837/76

Int. Cl.[2] E21C *27/24*

U.S. Cl. 299—75 **6 Claims**

1. In a mine cutting machine which includes a hollow cutting arm that can be swiveled in all directions with the cutting arm being provided with hollow cutting heads on each side of the end thereof, each cutting head being hinged around an axis which is located vertically to the longitudinal position of the cutting arm, in which by the swiveling of the cutting arm the cutting heads are moved across the mine face and driven by reduction gearing drive means located in the hollowed portion

of said cutting arm and wherein at least the last phase of the reduction gearing drive means is disposed within the hollowed portion of said cutting heads, the improvement comprising having at least a portion of the reduction gear housing within the cutting axis in communication with the hollowed portion of the cutting heads providing a separate oil supply tank on the cutting arm at a point between the cutting motor and the cutting machine for holding a separate supply of oil, connecting at least one oil supply line between said oil supply tank and the housing of the reduction gearing drive means adjacent said cutting heads, providing at least one oil discharge line between said oil supply tank and the housing of said reduction gearing drive means at a distance from said cutting heads, pump means



for circulating oil from said oil supply tank through said at least one oil supply line and said at least one oil discharge line so that a flow of oil is established from said oil supply tank through said at least one oil supply line through at least portion of the reduction gear housing over the last phase of the reduction gear drive means within said cutting heads and back to said oil supply tank through said at least one oil discharge line, and cooling means for cooling oil held in said oil supply tank wherein each of said cutting heads includes means defining hollow spaces located therein and wherein said at least one oil supply line discharges cooled oil into said hollow spaces within said cutting heads and wherein said at least one oil discharge line is connected to that portion of the reduction gear housing closest to said cutting motor.

4,162,105

BASE FLANGED TIRE CARRYING RIMS, WHEELS AND FASTENING ASSEMBLIES

William D. Walther, Kettering, Ohio, assignor to Dayton Walther Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 749,243, Dec. 13, 1976, Pat. No. 4,129,336, which is a continuation-in-part of Ser. No. 592,502, Jul. 9, 1975, abandoned. This application Jun. 27, 1977, Ser. No. 810,297

Int. Cl.[2] **B60B** *23/10*

U.S. Cl. 301—12 R **6 Claims**

1. A combination of dual inner and outer tire carrying rims seated and locked by inner and outer rim fastening assemblies on a vehicle wheel,

said wheel (120) having a plurality of inner and outer spoke members, each of said inner spoke members having a felloe comprising a radially outer axially oriented surface (131) substantially parallel to the rotational axis of said wheel and an adjacent radially inwardly directed surface (132) substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies, each of said outer spoke members having a felloe comprising a radially inwardly directed surface (137) substantially perpendicular to the rotational axis of said wheel and providing a mounting location for an axially projecting component of said fastening assemblies and an adjacent radially inner axially oriented lateral surface (138) substantially parallel to the rotational axis of said wheel,

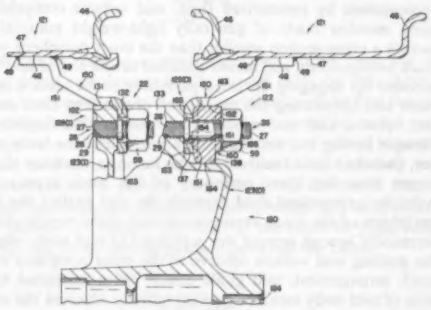
each of said rims (121) having radially outwardly projecting bead flanges and radially inwardly projecting mounting flanges, each of said mounting flanges (150) having a radially outer portion integrally attached to a conforming annular surface on a base portion of said rim between said bead flanges,

each said mounting flange further having a medial portion comprising an axially oriented radially inner surface (152),

each said mounting flange still further having a radially inwardly directed leg portion (153) adjacent said axially oriented surface and oriented substantially perpendicular to the rotational axis of said rim and having a bore therein for receiving said axially projecting component of said fastening assemblies, said bore having an effective diameter greater than the effective diameter of an axially projecting component of said fastening assemblies,

each said outer rim fastening assembly (122) comprising said axially projecting component and a clamp element (160) and a rotatable nut (59) carried thereon, said clamp element having a bore (161) therein for receiving said axially projecting component, said bore having an effective diameter greater than the effective diameter of said axially projecting component,

each said clamp element further having dual concentric and segmental axially movable axially oriented surfaces; a radially outer surface (163) and a radially inner surface (164),



each said clamp element still further having parallel axially movable radially directed surfaces; an axially inner surface (165) and an axially outer surface (166),

whereby, said inner rim is seated on, and thereafter locked on, said wheel by initial and final tightening of said inner rim fastening assemblies against each said mounting flange leg portion, said initial tightening of said inner rim fastening assemblies seating said axially oriented mounting flange surfaces (152) in concentric registry with said axially oriented wheel felloe surfaces (131); said final tightening of said inner rim fastening assemblies locking said rim on said wheel by the full surface engagement of said mounting flange leg portions (153) with said radially inwardly directed wheel felloe surfaces (132),

and, whereby, said outer rim is seated on, and thereafter locked on, said wheel by initial and final tightening of said outer rim fastening assemblies, said initial tightening of said rotatable nuts (59) against said axially outer clamp element surfaces (166) seating said axially oriented mounting flange surfaces (152) in concentric registry with said radially outer clamp element surfaces (163) and seating said radially inner clamp element surfaces (164) in concentric registry with said radially inner axially oriented wheel felloe surfaces (138); said final tightening of said rotatable nuts (59) against said axially outer clamp element surfaces (166) locking said rim on said wheel by the full surface engagement of said axially inner clamp element surfaces

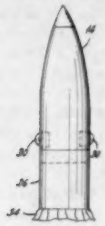
(165) with said mounting flange leg portions (153) and by the full surface engagement of said mounting flange leg portions (153) with said radially inwardly directed wheel felloe surfaces (137).

4,162,106

PNEUMATIC VEHICLE WITH CENTRALLY MOUNTED GUIDE MEANS

Leo B. Lawrence, Tollgate Rd., Pipersville, 18947 and Joseph Del Rossi, 465 Elm Ave., Churchville, Pa. 18966

Continuation-in-part of Ser. No. 730,337, Oct. 7, 1976, abandoned. This application Feb. 2, 1978, Ser. No. 874,383
Int. Cl.[2] A63H *29/16*
U.S. Cl. 406—185 5 Claims



1. A toy vehicle adapted to be propelled through a track arrangement by pressurized fluid, said vehicle comprising a body member made of generally light-weight material and having a cross-section smaller than the inner periphery of the track arrangement, seal means attached to one end of said body member for engaging the inner periphery of the track arrangement and minimizing the passage of pressurized fluid around the vehicle, said seal means comprising a thin flexible diaphragm having one end carried on one end of the body member, the other end of said diaphragm having a diameter slightly larger than the inner periphery of the track arrangement whereby pressurized fluid expands the seal against the inner periphery of the track arrangement and guide means circumferentially spaced around the periphery of said body member for guiding said vehicle relative to the inner periphery of the track arrangement, said guide means being restricted to the area of said body member portion radially adjacent the center of gravity of said body member.

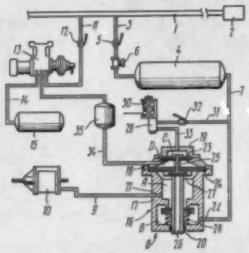
4,162,107

BRAKING SYSTEM FOR A RAILWAY CAR

Gennady S. Bazilevich, Zheleznogorsk Kurskoi oblasti; Alexandr F. Gorin, Kremenchug Poltavskoi oblasti; Vladimir N. Lozinsky, Zheleznogorsk Kurskoi oblasti; Vladimir I. Lysenko, Kaliningrad; Vladimir M. Nosach, Poltavskaya oblast, Kremenchugsky raion, selo Kameno-Potoki; Grigory I. Solod, Moscow, and Yakov M. Sterinzat, Kremenchug Poltavskoi oblasti, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky Proektno-Tekhnologichesky Institut Vagonostroenia, U.S.S.R.

Filed Jan. 30, 1978, Ser. No. 873,689
Int. Cl.[2] B60T *13/74*
U.S. Cl. 303—3 1 Claim

1. A braking system for a railway car comprising: a source of compressed air; a compressed air line connected to said source of compressed air; an auxiliary receiver connected to said compressed air line; a brake cylinder selectively communicating with said auxiliary receiver and atmosphere; a pneumatic air distributor communicating with said compressed air line; an electropneumatic valve connected to said auxiliary receiver; a valve means communicating with said pneumatic air distributor, with said electropneumatic valve, and with said auxiliary receiver for controlling the communication of said brake cylinder with the auxiliary receiver and atmosphere; said pneumatic air distributor and electropneumatic valve being adapted to control said valve means; said valve means comprising: a casing having an inlet and an outlet for compressed air, a movable member accommodated in said casing and adapted for disconnecting the inlet from the outlet of said casing, two diaphragms spaced apart from each other within said casing and interconnected for combined movement, said two diaphragms being of different surface areas, chambers defined by said diaphragms in said casing, one of said chambers defined in said casing by one



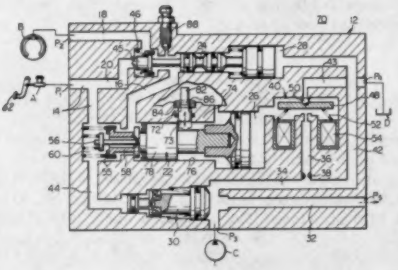
of said diaphragms, which is of a smaller surface area, communicating with said electropneumatic valve, the other of said chambers defined in said casing by the other of said diaphragms, which is of a greater surface area, communicating with said pneumatic air distributor, said diaphragms being connectible with said movable member during application of brakes for combined movement; and means for communicating said valve means with atmosphere.

4,162,108

HYDRAULIC ANTI-SKID DEVICE

Kazuaki Shimizu, Fujisawa, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Aug. 19, 1977, Ser. No. 826,250
Claims priority, application Japan, Aug. 23, 1976, 51-100373
Int. Cl.[2] B60T *13/68*
U.S. Cl. 303—115 4 Claims



1. A hydraulic anti-skid device for a hydraulic braking system, comprising

a pump generating a hydraulic fluid pressure,

means defining a first passage receiving a hydraulic braking pressure,

means defining a second passage communicable with said first passage,

means defining a third passage communicating with said first passage,

means defining a fourth passage alternatively communicable with said second and third passages for passing the braking pressure from said first passage to the outside of said anti-skid device, an expansion valve located between said first and second passages for controlling communication therebetween, said expansion valve having first means fed

with the hydraulic fluid pressure from said pump, said expansion valve assuming a first position in which it effects communication between said first and second passages when said first means is fed with the hydraulic fluid pressure and a second position in which it obstructs communication between said first and second passages when said first means is not fed with the hydraulic fluid pressure,

a bypass valve located between said fourth passage and both said second and third passages for controlling communication therebetween, said bypass valve having second means fed with the hydraulic fluid pressure, said bypass valve assuming a first position in which it effects communication between said second and fourth passages and obstructs communication between said third and fourth passages when said second means is fed with the hydraulic fluid pressure and a second position in which it obstructs communication between said second and fourth passages and effects communication between said third and fourth passages when said second means is not fed with the hydraulic fluid pressure,

manually operated locking means engageable with said expansion valve for locking said expansion valve in said first position, said locking means having a rest position in which it is disengaged from said expansion valve for permitting same to be moved into said second position and an operative position in which it is engaged with said expansion valve for preventing same from being moved into said position, said locking means having means for manually moving said locking means from said rest position into said operative position and vice versa, and manually operated retaining means engageable with said locking means for retaining said locking means in said rest position, said retaining means having a retaining position in which it is engaged with said locking means for retaining same in said rest position and a non-retaining position in which it is removed from said locking means for permitting same to be moved into said operative position, said retaining means having means for manually moving said retaining means from said retaining position into said non-retaining position and vice versa.

4,162,109

BONDED GUIDE RIM IN A RACE FOR A ROLLING BEARING

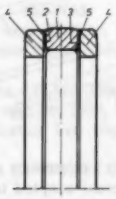
Hermann Müennich, Bad Kissingen, and Klaus Kispert, Schweinfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Feb. 2, 1977, Ser. No. 764,975

Claims priority, application Fed. Rep. of Germany, Feb. 7, 1976, 7603570[U]

Int. Cl.[2] F16C *33/58*

U.S. Cl. 308—216 **14 Claims**



1. In a bearing including outer and inner races and a plurality of roller elements distributed in at least one raceway defined between said races, the improvement in combination therewith, wherein one of said races comprises an annular member about a central axis with opposite end portions, a separate guide rim means having at least a portion extending radially closer to the other race than one of said end portions, said guide rim means and one end portion defining a pair of adjacent surfaces, and attachment means comprising a strip of cured thermo-setting cross-linked resin situated between said adjacent surfaces, said strip having opposite sides engaging and bonded to said surfaces and comprising substantially the sole means on said bearing for securing said guide rim means to said annular member, said roller elements axially engaging said radially extending portion of said guide rim means whereby thrust forces on said bearing are applied to said strip.

4,162,110

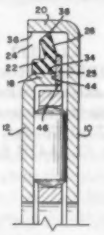
SEALED THRUST BEARING WITH RESILIENT SEAL HAVING A METAL PORTION

Cameron G. Gardella, Woodbury, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Mar. 6, 1978, Ser. No. 883,638

Int. Cl.[2] F16C *33/78*

U.S. Cl. 308—234 **5 Claims**



1. A thrust bearing comprising: a first thrust race and a second thrust race longitudinally spaced from the first thrust race, at least one of the two radial peripheries of the first thrust race being radially spaced from the corresponding radial periphery of the second thrust race; a plurality of rollers located between said thrust races; and a resilient seal including an annular elastomeric portion adapted to seal the radial space between said corresponding radial peripheries, and an annular metal portion in contact with one of the races to positively keep the seal in its sealing position between the races.

4,162,111

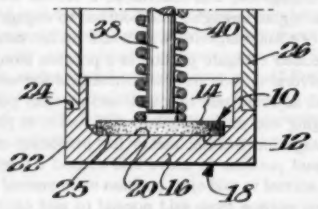
PIEZOELECTRIC ULTRASONIC TRANSDUCER WITH DAMPED HOUSING

Alvin E. Brown, Claremont, Calif., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 25, 1977, Ser. No. 827,599

Int. Cl.[2] H01L *41/10*

U.S. Cl. 310—326 **3 Claims**



1. An ultrasonic transducer comprising:

an electrical coaxial connector having an electrically insulated pin,

an acoustically transparent diaphragm,

a tubular housing interconnecting said diaphragm and said connector, said housing having a tube axis, said diaphragm having a face internal of said housing,

a flat piezoelectric crystal having one face in contact with said diaphragm, and

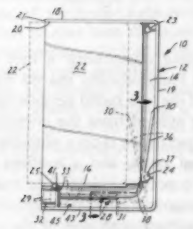
a compression spring in compression between said connector pin and another face of said crystal for electrically and acoustically coupling said crystal to said diaphragm internal face and electrically coupling said connector pin to said another crystal face, said diaphragm defining a protuberant peripheral internal face bevel for centering said crystal thereon for electrically insulating the other face of said crystal from said housing, an elongated spring guide having an axis, an axial bore fitted on said connector pin, and an axial stud for guiding said spring, said diaphragm being unitary and defining a tubular rim coaxial with and secured to said housing for damping unwanted vibrations in said housing, said rim having an axial length less than four times the wavelength of sound therein at the operating frequency of said crystal.

4,162,112

STORAGE ASSEMBLY FOR A TAPE MAGAZINE

Anthony W. Konkler, Lakeland, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 23, 1978, Ser. No. 871,174
Int. Cl.[2] A47B *81/06*
U.S. Cl. 312—15 **5 Claims**



1. In a storage assembly for a tape magazine comprising a housing including rectangularly disposed side, end and rear walls defining a socket having an open side adapted to slidably receive a said magazine, and means for ejecting a said magazine comprising a first stiff elongate portion having a manually engageable end, means mounting said first elongate portion adjacent and parallel to said end walls with said manually engageable end adjacent the open end of said socket for reciprocal motion between a normal position with said manually engageable end outermost and an eject position with said manually engageable end innermost, a second stiff elongate portion having an engaging end adapted to engage the innermost side of a said magazine within said socket, means mounting said second elongate portion in a position along said rear wall for pivotal motion from a normal position with said engaging end adjacent said rear wall and an eject position with said engaging end projecting into said socket to partially displace a magazine therein; means for providing engagement between said portions to move said second elongate portion from said normal to said eject position upon manual movement of said first portion from said normal to said eject positions, and means for biasing said first and second elongate portions to their normal positions, the improvement, wherein:

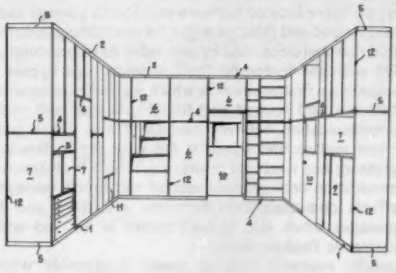
said first and second stiff portions are included in a one piece integral member of elastic resilient polymeric material, said member also having a relatively thin flexible portion connecting said first and second portions and providing both said means for providing engagement and said means for biasing.

4,162,113

COMPOSITE MODULAR FURNITURE

Piero Pallavicini, Via Fabio Filzi, 23, Milano, Italy

Filed Nov. 17, 1977, Ser. No. 852,555
Claims priority, application Italy, May 9, 1977, 23337 A/77
Int. Cl.[2] A47B *53/00*; F16B *12/00*
U.S. Cl. 312—199 **6 Claims**



1. In a modular piece of furniture, in combination:

a first and a second upright wall member with vertical edges angularly adjoining each other;

a first and a second hollow upright profile respectively secured to said vertical edges of said first and second wall members, each of said profiles having a generally trapezoidal cross-section with outwardly converging flanks separated by a slot;

a vertical bar alongside said first profile having a tenon received in the slot thereof;

a first hinge element secured to said bar; and

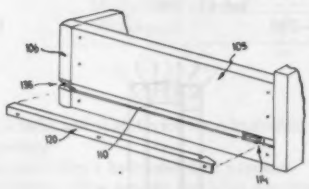
a second hinge element pivotally connected with said first hinge element, said second hinge element having a base received in the slot of said second profile whereby said wall members are relatively swingable about the pivotal axis of said hinge elements.

4,162,114

DRAWERS AND DRAWER COMPONENTS

Leon G. Litchfield, and Terence Hardy, both of Belper, England, assignors to L. B. (Plastics) Limited, Derbyshire, England

Filed Jul. 15, 1977, Ser. No. 816,039
Claims priority, application United Kingdom, Apr. 26, 1977, 17290/77
Int. Cl.[2] A47B *88/04, 88/14*
U.S. Cl. 312—330 R **21 Claims**



1. A drawer assembly comprising a drawer having tracks formed in the sides thereof adapted to receive any one of a plurality of interchangeable drawer runners of different form and a plurality of alternatively useable guide and bearing members adapted to slidingly support and guide the rear end of the drawer on the respective forms of runner, wherein one form of runner is of angle section having a mounting flange by means of which the runner may be mounted at a suitable location in a drawer supporting structure and a drawer-engaging flange projecting at right angles to the mounting flange and adapted to extend into the track in the associated drawer side, a front

guide and bearing member being detachably mounted at the forward end of the runner for sliding movement longitudinally of said track and said rear guide and bearing member being disposed in vertical alignment with the associated rear corner of the drawer and having a slot dimensioned to slidingly receive said drawer-engaging flange of the runner.

4,162,115

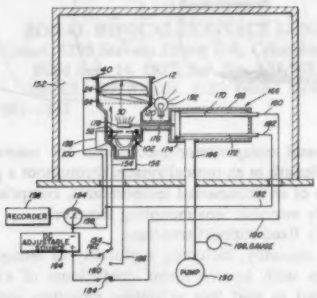
METHOD OF FABRICATING IMAGE INPUT SCREEN

James R. Caraher, Stamford, Conn., assignor to The Machlett Laboratories, Inc., Stamford, Conn.

Division of Ser. No. 784,207, Apr. 4, 1977. This application Apr. 20, 1978, Ser. No. 898,009

Int. Cl.[2] H01J *9/02, 9/20, 9/233*

U.S. Cl. 316—4 **5 Claims**



1. A method of fabricating an input screen for an image intensifier tube and comprising the steps of:

providing an envelope having an input faceplate and an output faceplate;

disposing an output screen within the envelope adjacent the output faceplate and in alignment therewith;

supporting an input screen scintillator layer of fluorescent material within the envelope in alignment with the input faceplate and in spaced opposing relationship with the output screen;

supporting a controllable oxygen liberating source in communication with the scintillator layer;

oxygenating the fluorescent material of the scintillator layer with oxygen controllably liberated from the source; and

depositing an input screen photocathode layer of photoemissive material on the surface of the scintallator layer adjacent the output screen.

4,162,116

DETACHABLE, WATER-TIGHT CONNECTION ELEMENTS FOR DETONATING DEVICES AND COMPONENTS WHICH PROCESS FOR THE IGNITION SIGNAL

Kurt Lehmann, Sythen near Haltern, Fed. Rep. of Germany, assignor to Wasagchemie GmbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 533,517, Dec. 17, 1974, abandoned. This application Apr. 26, 1978, Ser. No. 899,897

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1974, 2436534

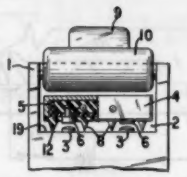
Int. Cl.[2] H01R *13/52*

U.S. Cl. 339—60 M **6 Claims**

1. A device to accomplish a water-tight electrical and mechanical connection between contacts in detonating devices connectable under water by divers wearing gloves comprising:

(a) an electrical device having a rigid surface containing at least two electrical contacts each terminating in a contact area,

(b) at least one detachable connecting element comprising a coupling part having at least two contact pins each terminating in a contact area mounted thereon, each of said contact pins being in electrical contact with a sealed lead-in wire, and a closed sealing bead disposed around but offset from each of said contact pins of a pliable electrically-insulatng material adapted to form a closed sealing surface with an adjacent surface when under pressure, each of said closed sealing beads when not under pressure being of sufficient extension whereby when said contact areas of said at least two contact pins and said at least two electrical contacts are abutting, each of said closed sealing beads is compressed by said rigid surface of said electrical device, and



(c) means in connection with said electrical device to apply pressure on said at least one detachable connecting element comprising an eccentric roller with a lever fixed to said roller whereby each of the said contact pins each terminating in a contact area is in electrical and mechanical contact with and abuts the contact area of each of said electrical contacts and said sealing beads are deformed against said rigid surface forming a water-tight seal on application of said pressure.

4,162,117

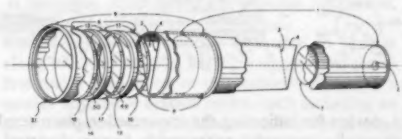
OPTICAL IMAGE MULTIPLYING DEVICE

Jeanne A. Gantz, 1972 El Dorado Ave., Berkeley, Calif. 94707, and David W. Kelso, 3929 Everett Ave., Oakland, Calif. 94602

Filed Sep. 30, 1977, Ser. No. 838,150

Int. Cl.[2] G02B *27/08*

U.S. Cl. 350—4.2 **6 Claims**



1. In an optical image multiplying device having an ocular body, an ocular aperture in one end, reflecting planes contained in said ocular body, and an object cell mounted on the other end of said body, the improvement comprising:

first and second tumbler objects within said object cell, each object carrying a pictorial representation on a first region thereof, said pictorial representation on said first region of said first object including a light transmitting portion through which details of said pictorial representation of said second object can be seen when viewed through said light transmitting portion.

4,162,118

WAVEGUIDE IMAGING SYSTEM

Esther M. Conwell, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 1, 1977, Ser. No. 783,573

Int. Cl.[2] G02B *5/14*

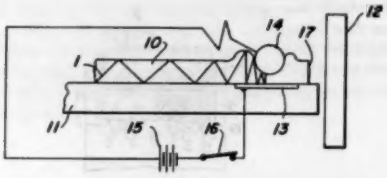
U.S. Cl. 350—96.13 **4 Claims**

1. A waveguide system for forming a line pattern of illumi-

nated and non-illuminated bits on an imaging surface, the system comprising:

(a) an imaging member having an imaging surface;

(b) a unitary waveguide means for guiding radiation propagating therein, the unitary waveguide being formed from identical elastomeric material and shaped so as to include a coupling means for coupling light into the waveguide means, lens means for collimating the light and a plurality of individual waveguide means arranged substantially parallel to each other in substantially the same plane, the plane being oriented with respect to the imaging surface



so that light emanating from the waveguide system impinges the imaging surface to form a line of bits; and

(c) field means comprising electrodes positioned on either side of the individual waveguide means so that, when subjected to voltage pulses, the field between the electrodes will attract the electrodes toward each other, altering the dimensional cross-section of the waveguide means between the charged electrodes and attenuating the light propagating therethrough to produce on the imaging surface a line pattern of illuminated and non-illuminated bits.

4,162,119

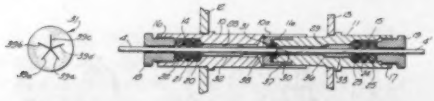
FIBER OPTIC POSITION INDICATOR

David S. Goodman, Mission Viejo, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Nov. 18, 1977, Ser. No. 852,859

Int. Cl.[2] G02B 5/14

U.S. Cl. 350—96.21 **15 Claims**



1. A device for indicating the connected-in-place condition of a physically removable subassembly having electrical connections intended to make and disengage with and from fixed electrical connections in a mounting arrangement in response to corresponding translational movements, comprising;

a first fiber optic light conducting element mounted in substantially fixed relationship with said removable subassembly, said element having a first end arranged with respect to a part of said removable subassembly to facilitate visual observation of light emitted therefrom when said device is in said connected-in-place condition in said mounting arrangement, the second end of said element being oriented to receive light from an external point along a light path substantially parallel to said translational movements when said subassembly is in said connected-in-place condition;

second means comprising a source of light and means fixed with respect to said mounting arrangement for directing light along said parallel path from a fixed location aligned with said first fiber optic element second end;

and third means operative as a function of the axial spacing along said parallel path between said fixed location and said fiber optic element first end to prevent substantial light transmission through said optical spacing when said axial spacing is less than a predetermined amount corresponding to said connected-in-place condition of said subassembly, and otherwise to permit light transfer between said first fiber optic element and said second means.

4,162,120

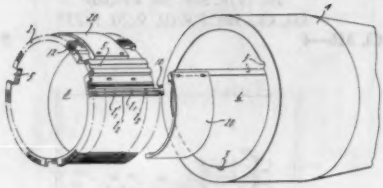
THERMAL COMPENSATOR LINKAGE

Isabel L. Moreno, Long Beach, Calif., assignor to Ford Aerospace & Communications Corp., Dearborn, Mich.

Filed Dec. 2, 1977, Ser. No. 856,699

Int. Cl.[2] G02B 7/02

U.S. Cl. 350—253 **9 Claims**



1. A thermal compensator mechanism for maintaining a preset focal length in an optical system throughout a predetermined range of environmental temperatures, comprising:

a relatively movable lens mounting structure;

a relatively fixed support structure;

a linkage assembly, including a plurality of elongated link elements with known linear coefficients of expansion, connected to said lens mounting structure and to said support structure for moving said lens mounting structure linearly with respect to said support structure in response to environmental temperature changes;

wherein elongated link elements are arranged in link pairs and each said link pair includes a first link element having a relatively large linear coefficient of expansion and a second link element having a relatively small linear coefficient of expansion; and

further wherein said first and second elongated link elements of each link pair are connected together at their corresponding first ends and folded at said connection so that their respective second ends are adjacent each other.

4,162,121

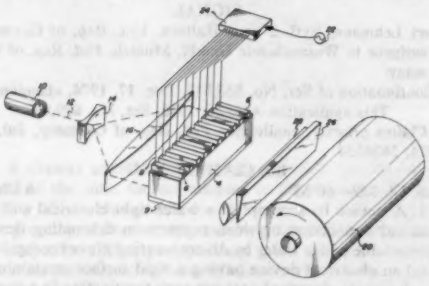
LINEAR ARRAY MODULATOR

Gary K. Starkweather, Saratoga, and John C. Urbach, Portola Valley, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Apr. 14, 1977, Ser. No. 787,406

Int. Cl.[2] G02F 1/33

U.S. Cl. 350—358 **4 Claims**



1. An optical system including:

means for providing a high intensity light beam of large area,

an acousto-optic device disposed in the path of said light

beam and including an acousto-optic media having a plurality of transducers bonded thereto, each of said transducers having an electrode associated therewith,

first means for providing a radio frequency signal,

second means coupled to said electrodes and said first means for supplying said radio frequency signal simultaneously to selected of said transducers whereby sound waves are provided within the portions of said media aligned with said selected transducers and portions of said light beam are simultaneously diffracted by said sound waves, and

a light sensitive medium disposed to receive simultaneously said portions of said light beam diffracted by said sound waves whereby spots of light are written in parallel on said light sensitive medium.

4,162,122

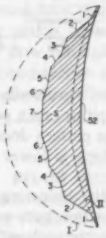
ZONAL BIFOCAL CONTACT LENS

Allen L. Cohen, 5795 Stevens Forest Rd., Columbia, Md. 21045

Filed Sep. 14, 1977, Ser. No. 833,368

Int. Cl.[2] G02B *3/08, 3/10;* G02C *7/04*

U.S. Cl. 351—161 **1 Claim**



1. A zonal bifocal contact lens which is designed with a concave-convex shape, with the posterior concave surface being adapted to adhere to and float on the cornea, the anterior convex surface being divided into annular zones, the individual zones presenting alternatingly, inclinations to the optical axis of the contact lens, corresponding approximately to the curvatures of a distance and near correction focal power, adjacent annular zones interfaced continuously so as not to present any steps or jumps upon the anterior surface of the contact lens wherein the inclinations of the annular zones have been adjusted to give slightly deeper troughs between the adjacent zones than would occur in matching the distance and near curvatures exactly, and adjusted in particular, so that an overlying tear layer would itself form a surface matching, in the corresponding zones, the distance and near curvatures as closely as possible.

4,162,123

AUTOMATIC FOCUSING SYSTEM

Tadao Isono, Kokubunji, Japan, assignor to Nihon Beru-Haueru Kabushiki Kaisha, Tokyo, Japan

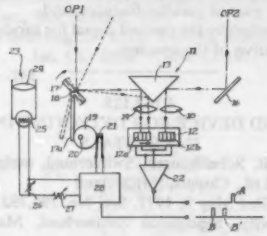
Filed Nov. 29, 1977, Ser. No. 855,582

Claims priority, application Japan, Nov. 30, 1976, 51/143000

Int. Cl.[2] G03B *7/08*

U.S. Cl. 354—25 **7 Claims**

1. A camera with a lens adapted to be used for automatic focusing comprising an automatic focusing detection means including a photo responsive cell being cyclically subjected to light emanating from a subject for detection of a maximum light intensity for determination of the distance of the subject from the camera, a reference pulse generating means associated with said photo responsive cell to periodically generate a pulse indicative of a condition of such cycling and light sensitive means responsive to the intensity of the light emanating from the subject connected to control the timing of the reference pulse so that a predetermined amount of delay may be



added to reference pulse proportional to the light level of light from the subject.

4,162,124

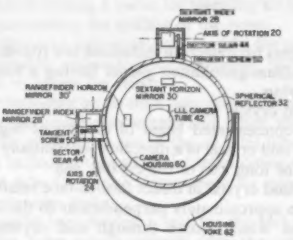
PASSIVE OPTICAL RANGEFINDER-SEXTANT

Sidney Feldman, Silver Spring, Md., and George G. Barton, Jr., Harkers Island, N.C., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 28, 1978, Ser. No. 882,285

Int. Cl.[2] G01C *3/08;* G01B *11/26;* G01C *1/00*

U.S. Cl. 356—4 **8 Claims**



1. A remotely controllable navigational instrument, comprised of:

a concave spherical reflector exposable to objects lying along its principal axis, having a single focal point;

a first and a second set of orthogonally arranged and remotely adjustable sextant optics, each including an index mirror disposed along a radial normal to the principal axis, and each reflecting onto the spherical reflector a primary image of one or more objects distant from the instrument;

a first index mirror rotatable about a horizontal axis normal to the principal axis of the spherical reflector;

the second index mirror rotatable about a third axis normal to the horizontal and the principal axes;

the horizontal and third axes equidistant from the principal axis;

first and second encoder means each mechanically linked to a different one of the sextant optics and each independently producing a position signal indicative of angular movement of the linked sextant optics;

first and second circuit means each coupled to a different one of the encoder means and each providing an output indicative of the respective angular movement;

an electronic camera located beyond the focal point for converting images upon the spherical reflector into a video signal for display;

control means including means for eliminating all components of the video signal but those components representing pairs of parallel features of the primary images having a preferred orientation, means for displaying the pairs of parallel features by scanning a display surface, means for

selecting from the display surface of field-of-view containing a pair of the parallel features, and means for producing a control signal varying in proportion to the spacing between the pair of parallel features; and,

means controlled by the control signal for producing a signal representative of the spacing.

4,162,125

PROCESS AND DEVICE FOR DETECTING INCLUSIONS IN CRYSTALS

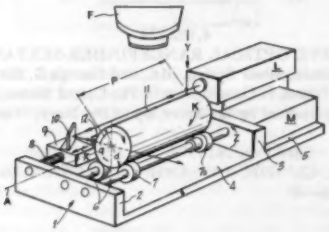
Walter Schmidt, Schaffhausen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed May 9, 1977, Ser. No. 794,793

Claims priority, application Switzerland, May 20, 1976, 6321/76

Int. Cl.[2] G01N *21/32*

U.S. Cl. 356—30 **17 Claims**



1. In a process for detecting inclusions in a rod-shaped single crystal of gallium-gadolinium garnet having a long axis, the steps comprising:

placing said crystal in air;

passing a concentrated beam of energy of high intensity through said crystal in a direction substantially perpendicular to the long axis of the crystal; and

observing said crystal in direct face-to-face relationship in a direction approximately perpendicular to the direction of the beam which passes through said crystal, whereby inclusions in said crystal are detected by scattering said beam.

8. A device for detecting inclusions in a rod-shaped single crystal of gallium-gadolinium garnet having a long axis which comprises:

means for supporting said crystal in air;

means for projecting a concentrated beam of energy of high intensity so that said beam of energy travels in a direction substantially perpendicular to said long axis of said crystal; and

means for observing said crystal approximately perpendicular to the direction in which said beam of energy is traveling when it enters said crystal, whereby inclusions in said crystal are detected by scattering said beams and are observed in direct face-to-face relationship.

4,162,126

SURFACE DETECT TEST APPARATUS

Yasuo Nakagawa, Yokohama, and Toshimitsu Hamada, Tokyo, both of Japan, assignors to Hitachi, Ltd., Japan

Filed Dec. 9, 1977, Ser. No. 859,206

Claims priority, application Japan, Dec. 10, 1976, 51-147764; Dec. 24, 1976, 51-154882

Int. Cl.[2] G01N *21/48*

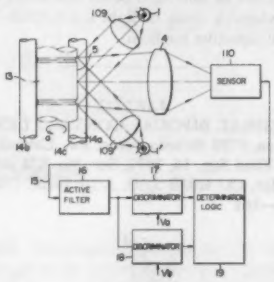
U.S. Cl. 356—237 **3 Claims**

1. A surface defect test apparatus comprising:

an illumination means for illuminating collimated lights onto a surface of an object at a predetermined area including at least a unit picture element, obliquely to said predetermined area from two opposing directions;

a sensor arranged to pick up diffused reflection lights from said predetermined area on said surface of said object in the direction perpendicular to said surface, said sensor having a function to scan the entire surface area of said object;

a first classification means for a defect pattern for said surface as a broken cavity pattern when a bright image signal in an image signal derived from said sensor in response to the diffused reflection light which varies in accordance with a surface condition at each of the picture elements in said predetermined area exceeds a predetermined threshold which is higher than an average level of said image signal;



a second classification means for classifying the defect pattern for said surface as a pit or crack pattern when a dark image signal in said image pattern does not exceed a predetermined threshold which is lower than said average level; and

a discrimination means for discriminating the pit pattern and the crack pattern by a relation between a length of contour and an area of the pattern classified by said second classification means.

4,162,127

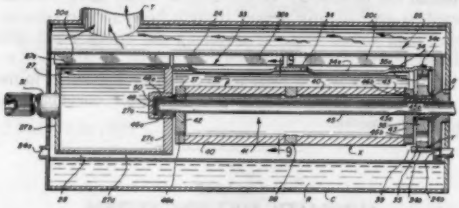
DASHER ASSEMBLY

Alden H. Wakeman, Lake Mills, and Leonard R. Heiliger, Fort Atkinson, both of Wis., assignors to Crepaco, Inc., Lake Mills, Wis.

Filed Dec. 27, 1977, Ser. No. 864,631

Int. Cl.[2] A23G *9/16*

U.S. Cl. 366—149 **6 Claims**



1. A freezing apparatus for ice cream mix or the like comprising an elongated cylindrical freezer chamber having a refrigerated interior surface, a first inlet for a first product ingredient adjacent one end of the chamber, a second inlet for a second product ingredient spaced from said first inlet, and a product outlet adjacent the opposite end of the chamber; and a power driven dasher assembly mounted within said chamber for rotation about a central longitudinal axis of said chamber; said assembly including a substantially cylindrical imperforate first section having one end thereof disposed adjacent said first inlet, the exterior of said first section coacting with the refrigerated interior surface of said chamber to form an elongated, relatively narrow annular passage through which the first product ingredient from the first inlet flows at a selected rate and is in contact with the refrigerated interior surface of the

chamber and is cooled thereby to a predetermined temperature whereby the first product ingredient is at an optimum viscosity for being subjected to a vigorous whipping action; an elongated skeletal second affixed to and extending longitudinally from said first section and terminating adjacent the product outlet end of said chamber, said second section occupying substantially the remainder of said chamber through which the first product ingredient flows while at said predetermined temperature, said first and second sections rotating as a unit about said chamber central axis; first means carried by and movable with said first and second sections and in scraping contact with the refrigerated interior surface and removing therefrom any frozen product ingredient; and an elongated second means mounted within said skeletal second section of rotation independently thereof about a second axis offset with respect to the chamber axis, said second means being provided with an elongated hollow shaft having one end thereof supported by an end of said first section from which said skeletal second section extends, said hollow shaft being in communication with the chamber second inlet, said hollow shaft one end coacting with the supporting end of said first section to form an inlet for introducing the second product ingredient within the skeletal second section; said rotating second means imparting vigorous whipping action to and intermixing both product ingredients as they flow through the portion of the chamber occupied by the second section and effecting controlled overrun of the product dispensed from the chamber outlet.

4,162,128

FOAM PRODUCTS

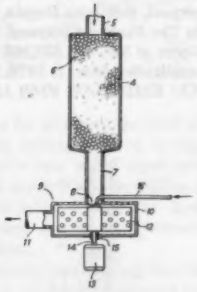
Dennis H. Ogden, Wolverhampton, and Frank G. Smith, Sutton Coldfield, both of England, assignors to British Industrial Plastics Limited, Manchester, England

Filed Oct. 7, 1977, Ser. No. 840,356

Claims priority, application United Kingdom, Jul. 11, 1977, 28899/77

Int. Cl.[2] B01F *3/08, 7/18, 15/02*

U.S. Cl. 366—154 **9 Claims**



1. In apparatus for producing low density, self-sustaining foams of cured urea/formaldehyde resin material, said apparatus comprising a foam generating column having inlet means for unfoamed liquid and air, outlet means for foam and a foam generating medium interposed between said inlet and outlet means,

the improvement comprising a centrifugal mixing head positioned immediately downstream of said outlet means and including a casing, an impeller rotatably mounted therein, an inlet communicating with said outlet means and directed substantially axially with respect to the axis of rotation of the impeller and an outlet directed substantially tangentially relative to said axis, together with a nozzle for supplying unfoamed liquid to the inlet to said mixing head.

4,162,129

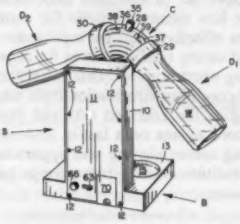
WINE AERATOR

Glen W. Bartholemew, Jr., San Antonio, Tex., assignor to Wine Breather, Inc., San Antonio, Tex.

Filed Aug. 29, 1977, Ser. No. 828,536

Int. Cl.[2] B01F *11/00, 13/02*

U.S. Cl. 366—211 **6 Claims**



1. A wine breather apparatus, comprising:

A support stand with a coupler removably connecting two wine containers;

said coupler including a flow path for flowing wine back and forth between two containers;

means for oscillating the coupler to pour wine back and forth between the containers through the coupler to aerate the wine;

the coupler including a valve for allowing air into the wine while preventing the spilling of the wine;

said coupler being removably mounted on the support stand; and operably connected with a motor to oscillate the coupler to aerate the wine;

the valve including an air-inlet tube communicating air from outside the coupler to within and a ball for preventing splashing of the wine out of the air-inlet tube; and

the valve including two air-outlet tubes connected with the air-inlet tube for connecting outside air into the coupler and containers; and

each air-outlet tube having a seat for the ball to block the air-outlet tube which extends into the container into which wine is being poured.

4,162,130

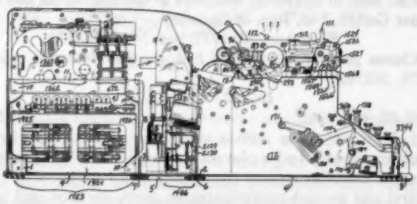
APPARATUS FOR PERFORMING DELETING OPERATIONS WHILE BACKSPACING IN A COMPOSING MACHINE

William S. Gubelmann, deceased, late of convent, N.J.; by Walter S. Gubelmann, executor, Palm Beach, Fla., and William R. Grier, New Vernon, N.J., assignors to R & I Patent Corporation, Morristown, N.J.

Division of Ser. No. 213,045, Dec. 28, 1971, Pat. No. 3,993,179. This application Oct. 15, 1976, Ser. No. 732,970

Int. Cl.[2] B41J *5/36*

U.S. Cl. 400—4 **20 Claims**



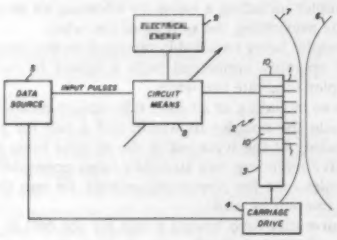
1. An apparatus for performing deleting operations in a composing machine for correcting composing errors made during text character and print condition composing operations, comprising forward composing means including character and function keys, text display means responsive to said

character and function keys for displaying text characters in conditions according to said function keys, a record means, encoding means responsive to said character and function keys for sequentially encoding different information bits on said record means in forward encoding sequences, said information bits representing text character information and print condition information, normally ineffective delete reading means located one code space extend beyond said encoding means for sensing the last effective bit of encoded information on the record means, delete key means operable for rendering said delete reading means effective, and backspace decoding means controlled by said delete reading means for sequentially reversing said composing operations and deleting text character information and print condition information from said record means by direct reading of the encoded text and function information from said record means on a last-in first-out basis, said backspace decoding means placing said apparatus in the text character print condition existing just prior to encoding of the last deleted character.

4,162,131
DRIVE CIRCUIT FOR PRINTING HEAD

Andrew B. Carson, Jr., Waynesboro, and Michael J. Tuso, Afton, both of Va., assignors to General Electric Company, Waynesboro, Va.

Filed Nov. 2, 1977, Ser. No. 847,853
Int. Cl.[2] B41J *3/12*
U.S. Cl. 400—124 **13 Claims**



13. In combination a plurality of printing elements, a source of individual drive pulses for actuating respective ones of said elements to print multiple element matrix symbols by impact printing, means for insuring that said drive pulses result in said printing elements producing constant impact forces over a wide range of printing rates comprising means for individually modifying the energy of the drive pulses actuating individual ones of said printing elements by an amount which varies as a function of the frequency of such last named drive pulses.

4,162,132
IMPLEMENTS

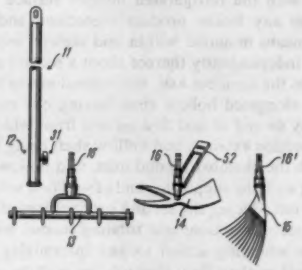
Werner Kress, Ulm-Lehr; Johann Katzer, Neu-Ulm; Franz Lopic, Burlafingen, and Willi Hepperle, Westerstetten, all of Fed. Rep. of Germany, assignors to Gardena Kress and Kastner GmbH, Fed. Rep. of Germany

Filed Apr. 20, 1977, Ser. No. 789,317
Claims priority, application Fed. Rep. of Germany, Apr. 22, 1976, 2617621
Int. Cl.[2] B25G *3/02*
U.S. Cl. 403—361 **36 Claims**

1. In combination with a set of implements comprising at least one handle and a plurality of implement heads, a quick-connect coupling system comprising:

first and second interengageable parts, each of said implement heads having said first coupling part thereon and said handle having said second coupling part thereon, whereby each implement head can be selectively attached to said handle;

one of said coupling parts comprising a female coupling sleeve having an open mouth and being provided with a moveable locking member thereon and the other of said coupling parts comprising a male coupling pin having a fixed locking surface thereon with which said locking member can cooperate to lock said coupling parts together, said coupling pin and said coupling sleeve having mutually abutting surfaces which are so shaped and adapted to one another that said mutually abutting surfaces prevent said pin from turning relative to said sleeve and include axial abutment faces effective in an insertion direction; and,

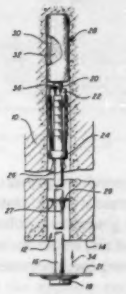


means providing tilt-free guidance of said pin in said sleeve, said guide means including guide portions which are located in a region near the mouth of said coupling sleeve and which have radial clearance for facilitating insertion of said coupling pin and axial lengths such that a space is formed between said pin and said sleeve, said coupling pin being tilted into a non-coaxial position within said coupling sleeve when engaged by said locking member, a portion of said pin occupying a portion of said space and said clearance being largely eliminated.

4,162,133
RESIN REINFORCED EXPANSION ANCHOR AND METHOD OF INSTALLATION

Carl A. Clark, Liverpool, and John Rogala, Syracuse, both of N.Y., assignors to The Eastern Company, Syracuse, N.Y.

Continuation-in-part of Ser. No. 835,367, Sep. 21, 1977, abandoned. This application Mar. 2, 1978, Ser. No. 882,797
Int. Cl.[2] E21D *21/00*; F16B *33/04*
U.S. Cl. 405—258 **31 Claims**



1. A combined resin-mechanical system for anchoring a bolt in a drill hole in a mine roof, or the like, said system comprising:

(a) an elongated bolt having a head at one end and threaded from the opposite end for at least a portion of its length;

(b) an expansion anchor including a hollow, radially expansible shell and a tapered nut having large and small ends, the latter being disposed in one end of said shell, said bolt

extending axially through said shell and threaded into said nut;

(c) a destructible capsule containing quick-setting adhesive and catalyst hardener resin materials in separate compartments, said capsule being rupturable upon advance of said bolt thereinto for mixture and hardening of said resin materials about said bolt within a drill hole; and

(d) means providing rotation of said anchor together with and in response to rotation of said bolt in one direction and allowing said anchor to be held rotationally stationary as said bolt is rotated in the opposite direction for threaded advancement into said nut, thereby expanding said shell for engagement of the outer surface thereof with the interior of the drill hole.

4,162,134

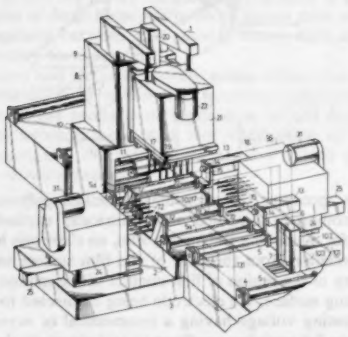
APPARATUS FOR ADJUSTING VERTICAL POSITION OF DRILLS IN MULTIPLE SPINDLE DRILLING MACHINE

Toshikatsu Kitagawa, Seki, Japan, assignor to Miyakawa Industry Company Limited, Seki, Japan

Filed Jan. 12, 1978, Ser. No. 869,016

Int. Cl.[2] B23B *39/18, 39/16*

U.S. Cl. 408—46 **8 Claims**



1. In an apparatus for adjusting the vertical position of drills in a multiple spindle drilling machine having:

(a) drills attached in two lateral upper and lower rows to a gear box of the multiple spindle drilling machine, said two groups of drills being arranged so that the drills of the respective groups can be simultaneously moved in the vertical direction;

(b) a motor for driving and rotating the two groups of drills;

(c) moving means disposed to connect said two groups of drills so that they are moved in the vertical direction according to the height of drilling position of a material to be processed; and,

(d) positioning means attached to the gear box to regulate the vertical movement of the drills of the respective groups within a certain range and set the vertical position thereof;

the improvement therein, wherein

(e) the drills of the two groups are attached to a pair of upper and lower movable members respectively, which are mounted on said gear box slidably in the vertical direction, and,

(f) said moving means includes at least one hydraulic cylinder attached to said upper movable member, said cylinder having a rod, the lower end of said rod being connected to the lower movable member.

4,162,135

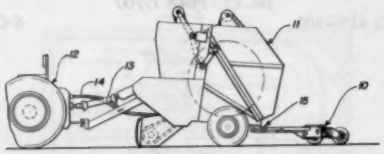
QUARTER BALE TURNING APPARATUS

Shaun A. Seymour, New Holland, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed Dec. 1, 1977, Ser. No. 856,441

Int. Cl.[2] B65G *7/00*

U.S. Cl. 414—780 **16 Claims**



1. A bale turning apparatus for use with a bale forming machine having a bale outlet defining a predetermined path of travel along which completed bales move for deposition on the ground, said bale turning apparatus comprising:

(a) a mobile frame attachable to the bale forming machine,

(b) support means connected to the frame and extending at least partially across said predetermined path of travel, said support means further having conveying means mounted thereon, said conveying means including bale gripping means movable along at least a portion of the length of said support means; and

(c) bale-engaging means mounted to at least a portion of said support means and being movable relative thereto across at least a portion of said predetermined path of travel with said bale gripping means for engaging completed bales and turning them a predetermined angle about a vertical axis prior to assuming a position of rest on the ground.

4,162,136

COOLED BLADE FOR A GAS TURBINE ENGINE

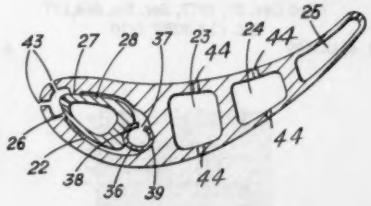
Roger J. Parkes, Stanton-by-Bridge, England, assignor to Rolls-Royce Limited, London, England

Filed Apr. 1, 1975, Ser. No. 563,144

Claims priority, application United Kingdom, Apr. 5, 1974, 15310/74

Int. Cl.[2] F01D *5/18*

U.S. Cl. 416—97 R **7 Claims**



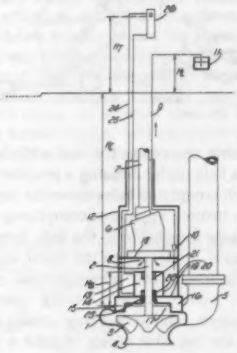
1. A cooled blade for a gas turbine engine comprising an aerofoil portion having a cavity therein, a cooling air entry tube within the cavity, said cavity having an interior surface with a part which forms a locating surface for said tube, a longitudinally extending depression formed in the outer surface of said cooling air entry tube, a further part of the interior surface of the cavity having a longitudinally extending depression facing the depression formed in the outer surface of said cooling air entry tube, and a resilient tube trapped between the depressions in said cooling air entry tube and said further part.

4,162,137

SUBMERSIBLE, HYDRAULICALLY-DRIVEN PUMP ROTATING ABOUT A VERTICAL AXIS

Leiv Bjerke, Oslo, Norway, assignor to Thune-Eureka A/S, Tranby, Norway

Filed Sep. 12, 1977, Ser. No. 832,412
Claims priority, application Norway, Oct. 21, 1976, 763590
Int. Cl.[2] F04B *17/00*
U.S. Cl. 417—405 6 Claims



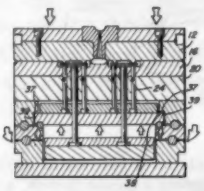
1. In a cargo vessel, a submersible, hydraulically-driven pump rotating about a vertical axis, the pump having a housing and a hydraulic motor and an impeller and a short shaft between the hydraulic motor and the impeller and a hydraulic pipe feeding the motor, a cofferdam around the hydraulic pipe and the hydraulic motor, extending from the pump housing to up above the cargo level in the vessel, and a shaft seal between the motor and impeller; the improvement in which the cofferdam is formed as three consecutive chambers around the shaft, extending between the hydraulic motor and the impeller, whereby the upper, first chamber is a receptacle for oil leakage from the hydraulic motor, and the next, second chamber contains a sealing liquid under pressure and is sealed at the top and at the bottom by respective mechanical shaft seals against the upper, first chamber and the lower, third chamber, respectively.

4,162,138

FLOATING INSERT INJECTION MOLD

John R. Byrne, Watertown, Wis., assignor to Will Ross Inc., Milwaukee, Wis.

Filed Dec. 27, 1977, Ser. No. 864,177
Int. Cl.[2] B29F *1/10*
U.S. Cl. 425—125 6 Claims



1. In an injection mold assembly for encapsulating inserts, said assembly having an "A" side plate, a "B" side plate, mold clamping means associated therewith and an ejector housing, the improvement which comprises:

"B" side clamping pin retaining means having at least one clamping pin retained thereon for clamping said inserts between said "A" side plate and said clamping pin, said "B" side clamping pin retaining means being movable relative to said ejector housing and said "B" plate, and

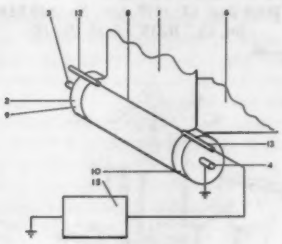
apportionment means associated with said ejector housing and said "B" side clamping pin retaining means to direct a predetermined amount of mold clamping force to said "B" side clamping pin retaining means and said "B" plate, said apportionment means being a lever arm pivotably arranged between said ejector housing, said "B" side plate and said "B" side plate clamping pin retaining means.

4,162,139

CASTING OF POLYMERIC FILM

David J. Groves, Hitchin, and Albert Mason, Stevenage, both of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 599,935, Jul. 28, 1975, Pat. No. 4,046,842, and a continuation-in-part of Ser. No. 440,571, Feb. 7, 1975, abandoned, and a continuation-in-part of Ser. No. 336,047, Feb. 26, 1973, abandoned. This application May 3, 1977, Ser. No. 793,429
Claims priority, application United Kingdom, Feb. 7, 1973, 6031/73; Aug. 5, 1974, 34337/74
Int. Cl.[2] B29C *25/00*
U.S. Cl. 425—174.8 E 7 Claims



1. An apparatus for quenching a molten polymeric film, which comprises a cooled and electrically earthed casting surface for quenching the molten film, an electrode located in spaced relation from the path of the film surface and in the proximity of the region of first contact of the molten film and the casting surface, the electrode being connected to a source of alternating voltage having a symmetrical or asymmetrical waveform for applying a voltage to said electrode the peak to peak value of which exceeds the inception voltage of said electrode by at least 1 kilovolt, said source providing an output which exceeds 4.0 kilovolts peak to peak and has a frequency not exceeding that at which positive and negative electrostatic charges emitted by the electrode are unable to cross the space between the elecrrode and the molten film before the polarity of the voltage on the electrode changes, whereby, in operation electrostatic charges are emitted by the electrode and deposited by the applied electric field upon the molten film to cause the film to adhere to the casting surface.

4,162,140

NOX ABATEMENT IN BURNING OF GASEOUS OR LIQUID FUELS

Robert D. Reed, Tulsa, Okla., assignor to John Zink Company, Tulsa, Okla.

Filed Sep. 26, 1977, Ser. No. 836,379
Int. Cl.[2] F23C *1/08*
U.S. Cl. 431—284 5 Claims

1. In a burner system for burning gaseous or liquid fuel, the improved construction for minimization of the production of NOx, comprising;

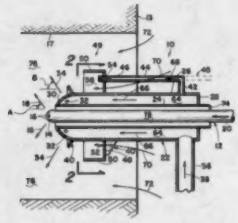
(a) a primary burner means comprising;

1. a liquid burner tube and means to supply liquid fuel under pressure to said liquid burner tube; said liquid burner tube closed at its distal end; said closure includ-

ing a plurality of ports arranged symmetrically, each port in a radial plane, and at a selected angle A to the axis of said liquid burner tube;

2. a gaseous burner tube comprising a pair of coaxial tubes, with means to supply gas under pressure to the annular space between said two tubes; the annular space closed at the distal end; said closure including a plurality of ports arranged symmetrically, each port in a radial plane, and at a selected angle B to the axis of said gaseous burner tube;

(b) means to supply combustion air around the outer surface of said gaseous burner tube;



(c) secondary burner means surrounding said gaseous burner tube, and upstream a selected distance from said ports, and means to supply a selected quantity of secondary gaseous fuel to said secondary burner means to form a whirling annulus of flame about said gaseous burner tube, an annular opening between said gaseous burner tube and said secondary burner means;

whereby said secondary burner means utilizes part of said combustion air to burn said secondary gaseous fuel;

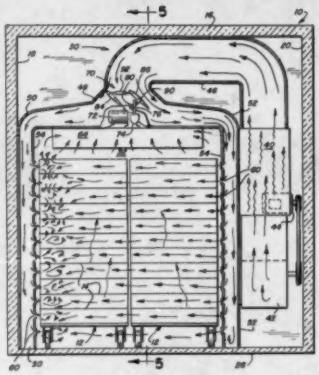
whereby the products of combustion of said secondary fuel burning, move with said combustion air downstream, into the zone of combustion of said primary combustion means.

4,162,141

VARIABLE AIR FLOW OVEN

Clarence W. West, 208 S. LaSalle St., Chicago, Ill. 60604

Filed Dec. 27, 1977, Ser. No. 865,041
Int. Cl.[2] F27B 9/00, 5/16
U.S. Cl. 432—144 5 Claims



1. In a variable air flow oven, having an air circulating system and a heating unit, the improvement which comprises a variable air directing control means for varying positive pressures of heated air flow from opposite sides of the oven through jet orifice means causing interaction of heated air jets from opposite sides of the oven meeting at a region of common velocity for causing a turbulence and mixing of the heated air which region of heated turbulent air travels from one side of the oven to the other substantially throughout a heating period.

4,162,142

TRITIUM LABELING OF ORGANIC COMPOUNDS DEPOSITED ON POROUS STRUCTURES

Richard L. E. Ehrenkaufer, Speonk; Alfred P. Wolf, Setauket, both of N.Y., and Wylie C. Hembree, Woodcliff Lake, N.J., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,412
Int. Cl.[2] G01M *23/12;* G21H *5/00*
U.S. Cl. 260—326.2 10 Claims

1. In the process of labeling an organic compound with tritium by reacting said compound with tritium gas activated by microwave discharge, the improvement of enhancing the desired reaction, which comprises depositing a film of said compound on the extensive surface of permeable material having very fine pores, and contacting said compound while deposited on said permeable material with tritium gas activated by microwave discharge and recovering the resulting tritium labeled organic compound from said permeable material.

4,162,143

EMULSIFIER BLEND AND AQUEOUS FUEL OIL EMULSIONS

Joseph B. Yount, III, Newark, Del., assignor to ICI Americas Inc., Wilmington, Del.

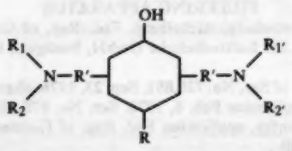
Filed Mar. 13, 1978, Ser. No. 885,758
Int. Cl.[2] C01L *1/32*
U.S. Cl. 44—51 30 Claims

1. A blend useful in preparing stable aqueous fuel oil emulsions comprising:

(a) compounds selected from a reaction product prepared by reacting:

(1) from about 1 to about 300 mols of an alkyleneoxide

(2) a mol of polyamine condensation product characterized by the general formula:



wherein R is an organic radical selected from the group consisting of alkyl and cycloalkyl radicals having from 4–12 carbon atoms, wherein R′ is an alkylene radical, wherein R_1 and R_1' are each selected from the group consisting of hydrogen and an acyclic hydrocarbon radical having from 1 to 18 carbon atoms and wherein R_2 and R_2' are each organic alkylene polyamine radicals containing from 1 to 3 amine groups selected from the group consisting of primary and secondary amine groups, each of said amine group being separated from any other amine group in said composition by 2–6 carbon atoms, or an organic carboxylic acid salt of said reaction product; and at least one of the compounds selected from the group consisting of:

(b) a nonionic compound prepared by reacting from about 10 to about 300 mols of an alkyleneoxide with hydroxyl containing compounds having 1–8 carbon atoms and alkyl phenols, wherein, the alkyl substituents have 2–15 carbon atoms; and

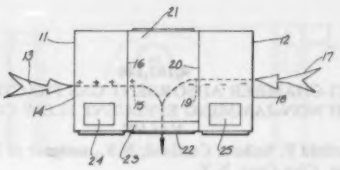
(c) an anionic compound selected from alkyl, aryl, and polyoxypropylene and polyoxyethylene ether esters of sulphuric, sulphonic and phosphoric acids and inorganic and organic neutral salts thereof.

4,162,144

METHOD AND APPARATUS FOR TREATING ELECTRICALLY CHARGED AIRBORNE PARTICLES

William A. Cheney, Cincinnati, Ohio, assignor to United Air Specialists, Inc., Cincinnati, Ohio

Filed May 23, 1977, Ser. No. 799,464
Int. Cl.[2] B03C *1/00*
U.S. Cl. 55—5 10 Claims



1. A method for preventing the deposition of airborne particles on walls and other exposed surfaces in an enclosed area containing air contaminated with particles, said method comprising the steps of:

a. in a first two stage electrostatic precipitator air cleaner, passing air contaminated with particles from the enclosed area over a positively charged ionizer to produce air containing positively charged particles, collecting some of said positively charged particles on one or more collector plates in a first collector positioned downstream from said positively charged ionizer, and exhausting from said first collector a relatively clean airstream containing some positively charged particles;

b. in a second two stage electrostatic precipitator air cleaner, passing air contaminated with particles from the enclosed area over a negatively charged ionizer to produce air containing negatively charged particles, collecting some of said negatively charged particles on one or more collector plates in a second collector positioned downstream from said negatively charged ionizer, and exhausting from said second collector a relatively clean airstream containing some negatively charged particles; and

c. mixing said air streams

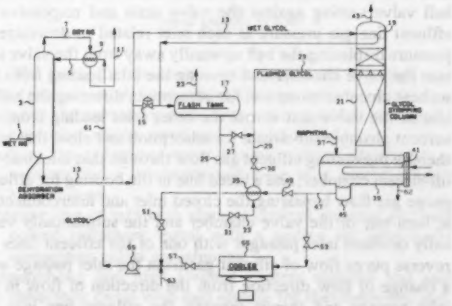
d. exhausting said mixed airstreams from said first and second collectors into the enclosed area.

4,162,145

REGENERATION OF LIQUID ABSORBENTS

Carl E. Alleman, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 9, 1977, Ser. No. 858,935
Int. Cl.[2] B01D *53/14;* C07C *29/26*
U.S. Cl. 55—32 10 Claims



1. A method for separating a water component and a glycol component from a liquid mixture thereof said method compris-

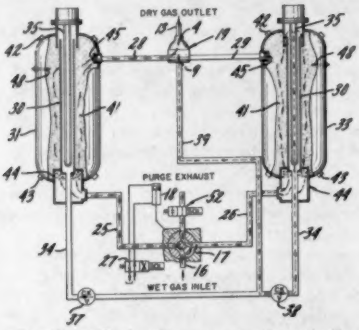
ing distilling said liquids in the presence of a liquid naphtha fraction having a boiling range from at least that of the lower boiling component up to the boiling point of the higher boiling component.

4,162,146

MULTI-CHAMBER ADSORBENT GAS FRACTIONATOR WITH NON-JAMMING EFFLUENT FLOW CONTROL VALVE

Chesterfield F. Seibert, Cortland, N.Y., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Dec. 14, 1977, Ser. No. 860,280
Int. Cl.[2] B01D *53/04*
U.S. Cl. 55—163 13 Claims



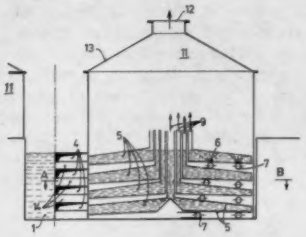
1. Apparatus for reducing the concentration of a first gas in a mixture thereof with a second gas to below a limiting maximum concentration thereof in the second gas, comprising, in combination, a pair of vessels; a chamber in each vessel for a bed of particulate friable sorbent having a preferential affinity for the first gas; an influent line for delivering influent gas to each sorbent chamber; an influent flow control valve in the influent line for directing the influent gas to the one of the chambers that is on-stream for adsorption; an effluent line for delivering effluent gas from each sorbent chamber; an effluent flow control valve in the effluent line for directing the effluent gas from the chamber that is on-stream for adsorption; the effluent valve comprising a valve housing; a valve chamber in the housing having separate substantially vertically oriented inlets and inlet passages leading thereinto, one from the effluent line from each sorbent chamber; a substantially horizontally oriented valve seat across each inlet; and a free-rolling ball valve seating against the valve seats and responsive to effluent line gas pressure at each inlet related to downstream pressure displacing the ball upwardly away from the valve seat into the valve chamber and opening the inlet leading from the sorbent chamber on-stream for adsorption, directing the ball to seat at the valve seat across the other inlet leading from the sorbent chamber off-stream for adsorption and close that inlet, thereby preventing effluent gas flow through that inlet into the off-stream chamber; and a bleed line in the housing for effluent purge gas flow bypassing the closed inlet and interconnecting at least one of the valve chamber and the substantially vertically oriented inlet passages with one of the effluent lines for reverse purge flow of effluent gas from the inlet passage with a change of flow direction from the direction of flow in the inlet passage and thence through the effluent line into the sorbent chamber that is off-stream for adsorption but on-stream for regeneration to regenerate the sorbent bed with such purge flow.

4,162,147

APPARATUS FOR TREATING EFFLUENTS

Wilhelm Haverkamp, Essen, Fed. Rep. of Germany, assignor to Krupp-Koppers GmbH, Essen, Fed. Rep. of Germany

Filed Jun. 5, 1978, Ser. No. 912,522
Claims priority, application Fed. Rep. of Germany, Jun. 10, 1977, 2726233
Int. Cl.[2] B01D *19/00*
U.S. Cl. 55—191 10 Claims



1. An apparatus for removing harmful substances from effluents which flow through an effluent channel, comprising wall means forming at one side of the effluent channel a treating chamber having an upper gas outlet opening; at least two superposed trays in said treating chamber and each having an upper inlet and a lower outlet connected by a spiral flow path, said inlets being located in the effluent channel so that effluent flowing in the channel is compelled to enter into them, said trays having respective bottom walls provided with nozzles and respective top walls provided with concentric gas outlets which communicate with the interior of said treating chamber; and means for supplying treating gas to said nozzles so that the gas issues from said nozzles and travels through the effluent in the respective tray to entrain harmful substances present in the effluent.

4,162,148

FILTERING APPARATUS

Joachim Flirstenberg, Aichelberg, Fed. Rep. of Germany, assignor to LTG Lufttechnische GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 725,851, Sep. 23, 1976, abandoned. This application Feb. 6, 1978, Ser. No. 875,349
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1975, 2542300
Int. Cl.[2] B01D *45/18, 46/04;* B65B *1/20*
U.S. Cl. 55—272 24 Claims

1. A filter apparatus for removal of fibers from a stream of moving air comprising:

a hollow casing having an air inlet for unfiltered air having fibers suspended therein and an air outlet for filtered air;

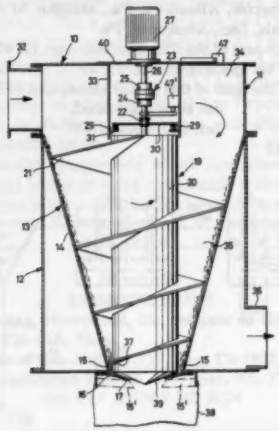
a fiber filtering assembly having an elongated hollow fiber filter positioned within said casing so as to define an unfiltered air chamber and a clean air chamber and having an inlet and an outlet axially spaced from each other, said inlet communicating with the casing inlet, said fiber filter having openings therethrough sized to trap fiber particles but permitting the flow of air therethrough to the casing outlet;

a screw conveyor having a helical flight of substantially the same radius as the inner surface of said fiber filter and which extends at least substantially the length of the hollow casing and positioned within said fiber filter and being substantially co-extensive therewith for providing means for axially displacing the fibers to the fiber filter outlet;

means defining an opening in said casing surrounding and adjacent to the fiber filter outlet;

flexible means supported on said casing and positioned adjacent said casing opening so as to at least partially close said casing opening; and

means for driving said conveyor, whereby fibers trapped on the inner surface of said fiber filter are compacted and moved toward said flexible means until they exit from said

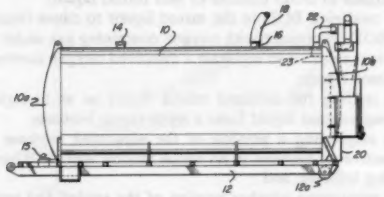


filter outlet by flexing said flexible means to provide a discharge path for said fibers through the opening in said casing.

4,162,149

GRAVEL AND DUST SEPARATOR AND CONTAINER FOR VACUUM CLEANING SYSTEMS

Clayton G. Mekelburg, 2609 S. Raritan, Englewood, Colo. 80110

Filed Jan. 3, 1978, Ser. No. 866,809
Int. Cl.[2] B01D *50/00*; A47L *9/16*
U.S. Cl. 55—315 **7 Claims**

1. A container and separator assembly for a vacuum cleaning system constructed and arranged for releasable connection to a separable airpump and drive and releasable connection to flexible vacuum tubes, comprising:

(a) an enclosed container constructed and arranged for handling by conventional trash handling means, and having a lower door for removal of content by tilting the container including airtight seal means for said lower door, and having inlet means for releasable connection to flexible vacuum tubes, and an outlet;

(b) at least two series connected cyclone separators for cleaning air passing out of said container outlet mounted on said container;

(c) passage means from said container outlet to the upstream one of said at least two series connected cyclone separators for passing air;

(d) storage means including separate containers for each of said at least two cyclone separators for accumulating solid matter removed by said at least two cyclone separators;

(e) means for emptying said storage means; and

(f) air outlet means from the downstream one of said at least two cyclone separators, and said air outlet means has means for releasable attachment to airpump means.

4,162,150

APPARATUS FOR SEPARATING WATER AND STEAM IN A NUCLEAR STEAM GENERATOR

William R. Carson, Chattanooga, Tenn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 17, 1977, Ser. No. 852,271
Int. Cl.[2] F22B *37/26*; B01D *53/26*
U.S. Cl. 55—337 **9 Claims**

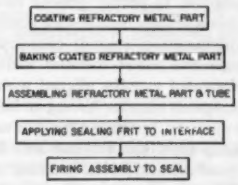
1. A steam-water separator that comprises in combination an outer cylindrical housing disposed in an axially upright position, a perforate housing concentrically aligned within the outer housing having axially disposed inlet and outlet ports at opposite ends thereof arranged to provide an annular space between inner and outer housing members, spinner vanes in the inlet port of the perforate housing adapted to subject fluid flowing axially therethrough to a rotary movement that imparts centrifugal force to said liquid sufficient to move the liquid radially through the perforations of the inner housing while the steam continues to flow axially to said outlet port, inclined spinner vanes that comprise forward and aft leaves joined by a continuous bight in the annular space between inner and outer housing members for imparting a rotary movement to the water flowing therethrough, and apertures in the outer housing wall for venting residual steam radially therethrough after it has been separated from water by passing over the vanes in the annular space between housing members.

4,162,151

METHOD OF FORMING ARC TUBE END SEAL

Ranbir S. Bhalla, West Paterson, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Division of Ser. No. 796,579, May 13, 1977, Pat. No. 4,103,200. This application Feb. 8, 1978, Ser. No. 875,956
Int. Cl.[2] C03B *23/20*; C03C *27/02*
U.S. Cl. 65—42 **9 Claims**


COATING REFRACTORY METAL PART
BAKING COATED REFRACTORY METAL PART
ASSEMBLING REFRACTORY METAL PART & TUBE
APPLYING SEALING FRIT TO INTERFACE
FIRING ASSEMBLY TO SEAL

1. The method of bonding a refractory metal to a high alumina content material comprising the steps of:

coating the refractory metal with a slurry which principally comprises silicon metal and a liquid vehicle;

baking the refractory metal having a slurry thereon in a vacuum for a predetermined time at a predetermined temperature;

coating one of said high alumina content material and said coated refractory metal with a sealing frit principally comprising calcia and alumina;

assemblying said high alumina content material and said refractory metal with said sealing frit therebetween; and

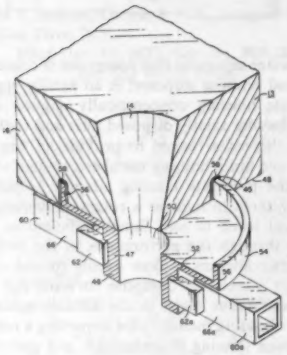
baking said assembly in accordance with a predetermined sealing schedule whereby an improved bond is provided between said refractory metal and said high alumina content material.

4,162,152

MOLTEN GLASS METERING DEVICE FOR MAKING LAMP BASES

James Petro, Little Falls, N.J., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 9, 1977, Ser. No. 831,723
Int. Cl.[2] C03B 5/26
U.S. Cl. 65—164 3 Claims



1. A molten glass metering device for rapidly and accurately controlling the viscosity and thus the rate of flow of molten glass from an orifice in a wall of a glass melting furnace, the outer portion of said wall having provided therein an annular-shaped slot spaced from and encircling said orifice, said orifice positioned in said furnace to have a quantity of molten glass positioned thereover to permit gravity flow of a stream of molten glass therethrough, said device comprising:

(a) a high-temperature-resistant chemically stable electrically conductive metal member including an integral hollow elongated member aligned with said orifice, said hollow elongated member having an inlet end for contact with said outer wall portion of said furnace so that molten glass passing from said furnace will flow through said hollow member, said metal member also including an integral flange member extending radially outwardly from said inlet end of said hollow member and an integral upturned lip member continuous about the periphery of said flange member, said upturned lip member sized to fit into said slot in said outer wall portion of said furnace to permit sealing of said lip member in said slot;

(b) water-cooled electrical contact members affixed to opposite side portions of said metal member, and said contact members adapted to be connected to a source of electrical energy to pass current through said metal member and self-resistance heat same to a predetermined temperature; and

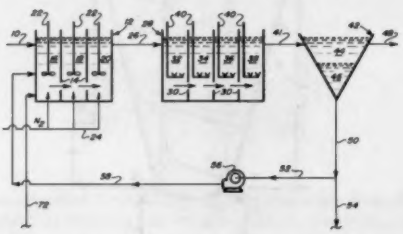
(c) electrical control means for controlling the self-resistance heating of said metal member to vary in a rapid and controllable fashion the temperature thereof thereby to control the temperature and thus the viscosity of glass within said orifice to control the rate of glass flow therethrough.

4,162,153

HIGH NITROGEN AND PHOSPHOROUS CONTENT BIOMASS PRODUCED BY TREATMENT OF A BOD-CONTAINING MATERIAL

Marshall L. Spector, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 676,266, Apr. 12, 1976, Pat. No. 4,056,465. This application Jul. 25, 1977, Ser. No. 818,786
The portion of the term of this patent subsequent to Nov. 1, 1994, has been disclaimed.
Int. Cl.[2] C02C 1/06
U.S. Cl. 71—12 17 Claims



1. An improved high nitrogen-, and phosphorus- content biomass characterized by a phosphorous content of at least about 3.96% and produced by the operation of an activated sludge process which inhibits proliferation of filamentous biomass, said process consisting essentially of:

(a) first forming a mixed liquor by mixing activated biomass with nitrogen-, phosphorus-, and BOD-containting influent and initially treating the mixed liquor under anaerobic conditions such as to be substantially free of NO_x^- and to have a dissolved oxygen content of less than 0.7 ppm; thereby effecting selective production of nonfilamentous microorganisms capable of sorbing BOD under anaerobic conditions, whereby said mocroorganisms effect a decrease in BOD content of said mixed liquor;

(b) oxidizing BOD in the mixed liquor to cause removal of BOD by contact with oxygen containing gas under conditions selected to maintain a dissolved oxygen content of at least 1 ppm;

(c) settling the oxidized mixed liquor so as to separate a supernatant liquid from a more dense biomass;

(d) employing a portion of the separated biomass as the activated biomass in an initial mixing with BOD-containing influent; and

(e) recovering another portion of the settled and separated biomass as product.

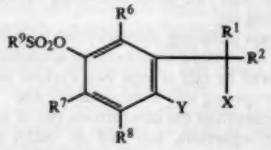
4,162,154

HERBICIDALLY-ACTIVE SULPHONATES

Peter S. Gates, and Derek Baldwin, both of Cambridge, England, assignors to Fisons Limited, London, England

Filed Feb. 3, 1978, Ser. No. 875,189
Claims priority, application United Kingdom, Feb. 5, 1977, 4847/77; Feb. 5, 1977, 4848/77; Feb. 5, 1977, 4849/77; Aug. 5, 1977, 32839/77
Int. Cl.[2] A01N 9/14; C07D 307/79, 307/86
U.S. Cl. 71—88 9 Claims

1. A sulphonate of the formula:



(I)

wherein X and Y together represent a group —CHR[3]—O—, the free oxygen atom of which is attached to the benzene ring; R^1, R^2 and R^3, which may be the same or different, each represent hydrogen or C 1 to 6 alkyl; R^6, R^7 and R^8, which may be the same or different, each represent hydrogen, C 1 to 6 alkyl, halogen, cyano, C 2 to 6 carboxylic acyl, or C 1 to 4 alkoxy; and R^9 represents C 1 to 6 alkyl, phenyl or C 7 to 10 phenylalkyl (each of which may be unsubstituted or substituted by one or more chlorine or bromine atoms, C 1 to 4 alkyl groups, C 1 to 4 alkoxy groups or nitro groups), C 5 to 7 cycloalkyl, C 1 to 4 alkylamino, or dialkylamino wherein each alkyl moiety has from 1 to 4 carbon atoms.

9. A herbicidal composition which comprises from 0.5 to 85% by weight of one or more compounds according to claim 1 in association with a suitable carrier and/or surface active agent.

4,162,155

COMPOSITIONS

David W. Young, Homewood, Ill., assignor to Howard Hall & Company, Cos Cob, Conn.

Continuation of Ser. No. 568,919, Apr. 17, 1975, abandoned.
This application Feb. 25, 1977, Ser. No. 772,139
Int. Cl.[2] A01N *9/02, 9/24*
U.S. Cl. 71—110 **6 Claims**

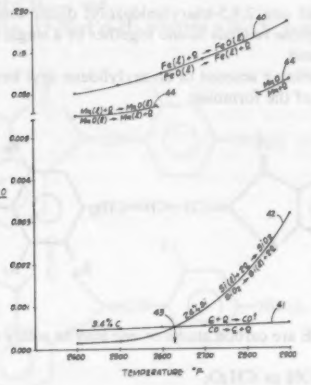
1. An aqueous agriculturally-active composition comprising isooctenyl-2,4-dichlorophenoxy acetate; N-acetyl-p-aminophenol in an amount sufficient to stabilize isooctenyl-2,4-dichlorophenoxy acetate from deterioration; and water.

4,162,156

PROCESS FOR MELTING CAST IRON BORINGS

Dewein H. Naffziger, Warren, Ohio, assignor to Advance Achievement Systems, Inc., Warren, Ohio and Wisconsin Centrifugal Inc., Waukesha, Wis.

Filed May 2, 1977, Ser. No. 792,553
Int. Cl.[2] *C21C 5/52*
U.S. Cl. 75—12 **10 Claims**



1. A process for melting cast iron borings, having a composition containing carbon and a silicon constituent, comprising the steps of:

(a) continuously charging a quantity of borings to a coreless induction furnace having power coils containing a molten heel of cast iron therein;

(b) maintaining the level of the melt in said furnace within the range of from about 50% to about 105% of the height of the said power coils for said furnace to establish a meniscus at the upper surface of said melt;

(c) maintaining the temperature of said melt at not less than about 100° F. above the SiO_2/CO inversion temperature T established by the relationship

$$T = \frac{-28{,}693}{\log \frac{(\%\ Si)}{(\%\ C)^2} - 16.16}$$

where T is expressed in degress Kelvin; and,

(d) controlling said charging step to introduce said borings at a rate to maintain the dissolved oxygen content of said melt below the Si/SiO_2 thermodynamic equilibrium as shown in FIG. 4 without causing the temperature of said melt to fall below 100° F. above T; wherein said borings are drawn beneath the surface of said melt without surface slag formation.

4,162,157

SECONDARY HARDENING STEEL HAVING IMPROVED COMBINATION OF HARDNESS AND TOUGHNESS

Earl R. Parker, San Leandro; Victor F. Zackay; Manjeshwar S. Bhat, both of Berkeley, and Warren M. Garrison, Jr., Oakland, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 15, 1978, Ser. No. 906,308
Int. Cl.[2] *C22C 38/02, 38/06*
U.S. Cl. 75—124 **8 Claims**

1. A secondary hardening alloy steel composition consisting essentially of about 0.25–0.5% carbon, about 0.5–1.0% manganese, about 1.5–3.0% nickel, about 0–1.0% chromium, about 1.75–2.5% molybdenum, about 0–0.4% vanadium, and an additive selected from about 1–3% aluminum and a combination of at least about 1% aluminum and at least about 1% silicon for a combined Al+Si content of about 2–4%, the balance being iron and impurity elements.

4,162,158

FERRITIC Fe-Mn ALLOY FOR CRYOGENIC APPLICATIONS

Sun-Keun Hwang, Rockypoint, N.Y., and John W. Morris, Jr., Berkeley, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1978, Ser. No. 973,844
Int. Cl.[2] *C22C 38/04*
U.S. Cl. 75—124 **2 Claims**

1. A ferritic alloy steel composition consisting essentially of about 10–13% manganese, about 0.002–0.01% boron, about 0.1–0.5% titanium, about 0–0.05% aluminum, and the remainder iron with incidental impurities normally associated therewith.

4,162,159

CAST IRON MODIFIER AND METHOD OF APPLICATION THEREOF

Lev V. Peregudov, ulitsa Puzakova, 39, kv. 231; Mikhail M. Malashin, ulitsa Liteizina, 74, kv. 30, both of Tula; Anatoly S. Naletov, ulitsa Novo-Cheremushkinskaya, 38, kv. 67, Moscow; Jury Y. Nenakhov, Scheglovskaya zaseka, dachny poselok, 3 proezd, 18, Tula, and Evgeny A. Sokolov, 11 Parkovaya ulitsa, 54, korpus 1, kv. 35, Moscow, all of U.S.S.R.

Filed Apr. 18, 1978, Ser. No. 897,269
Int. Cl.[2] *C22C 33/08*
U.S. Cl. 75—130 R **3 Claims**

1. A cast iron modifier containing, in % by weight:

silicon	from 30 to 40
rare-earth elements	from 2 to 8
calcium	from 10 to 20
aluminium	from 15 to 30
carbon	from 10 to 30
sulphur	from 0.1 to 0.3
iron	the balance.

4,162,160

ELECTRICAL CONTACT MATERIAL AND METHOD FOR MAKING THE SAME

Gerald J. Witter, Waukegan, Ill., assignor to Fansteel Inc., North Chicago, Ill.

Filed Aug. 25, 1977, Ser. No. 827,590
Int. Cl.[2] B22F 5/00
U.S. Cl. 75—246 **27 Claims**

1. A material for use in electrical contacts comprising a conductive metallic constituent in the amount of about 20% to 50% by weight, nickel in the amount of about 2% to 13% by weight, phosphorus in the amount of about 90–1000 ppm, and the balance including a refractory metallic constituent.

9. A material for use in electrical contacts comprising a conductive constituent in the amount of about 20% to 50% by weight, nickel in the amount of about 4% to 13% by weight, and the balance including a refractory metallic constituent, and when sintered in electrical contacts characterized by significantly decreased mean temperature rise of the contacts when subjected to 1,000 switching cycles at a rate of 12.85 cycles per minute under a current load of 20 amperes at 120 volts AC at 60 cycles per second with a 75% power factor compared to essentially the same contacts sintered under the same conditions and subjected to the same number of switching cycles at the same rate under the same load conditions and made of essentially the same material except that such material contains less than 2% by weight of nickel.

16. A material for use in electrical contacts consisting essentially of silver in the amount of about 20% to 50% by weight, nickel in the amount of about 2% to 13% by weight, phosphorus in the amount of about 90 to 1000 ppm and the remainder tungsten.

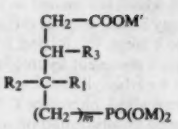
4,162,161

REVERSAL COLOR PHOTOGRAPHIC PROCESS

Isao Shimamura, and Yasuharu Nakamura, both of Minami-ashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Minami-ashigara, Japan

Filed Aug. 8, 1977, Ser. No. 822,764
Claims priority, application Japan, Aug. 6, 1976, 51-94375
Int. Cl.[2] G03C 5/50
U.S. Cl. 96—59 **9 Claims**

1. A reversal color photographic process in which color development is carried out in the presence of a color coupler which comprises subjecting an image-wise exposed silver halide color photographic light-sensitive material to a first black-and-white development and then (a) color developing said light-sensitive material with a color developing solution containing a p-phenylene diamine or derivative thereof color developer, a water-soluble stannous salt and a phosphonocarboxylic acid compound; or (b) processing said light-sensitive material with a fogging bath containing a water-soluble stannous salt and a phosphonocarboxylic acid compound and then color developing said light-sensitive material with a p-phenylene diamine or derivative thereof color developer, whereby silver halide which was not developed in the first development is developed in the presence of a color coupler to form color images, said phosphonocarboxylic acid compound being represented by the general formula (I):



(I)

wherein

R_1 is —COOM′ or —$PO(OM)_2$;

R_2 is a hydrogen atom, an alkyl group containing 1 to 4 carbon atoms, —$(CH_2)_n$COOM′ or a phenyl group;

R_3 is a hydrogen atom or —COOM′;

M and M′, which may be the same or different, each is a hydrogen atom, an alkali metal atom or an ammonium group;

m is 0 or 1; and

n is 1 to 4.

4,162,162

DERIVATIVES OF ARYL KETONES AND p-DIALKYL-AMINOARYLALDEHYDES AS VISIBLE SENSITIZERS OF PHOTOPOLYMERIZABLE COMPOSITIONS

Thomas E. Dueber, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

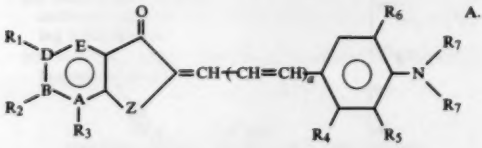
Filed May 8, 1978, Ser. No. 903,947
Int. Cl.[2] G03C 1/70
U.S. Cl. 96—115 P **17 Claims**

1. A photopolymerizable composition comprising an admixture of

(1) at least one non-gaseous ethylenically unsaturated compound having a boiling point above 100° C. at normal atmospheric pressure and being capable addition polymerization;

(2) at least one 2,4,5-triarylimidazolyl dimer consisting of two lophine radicals bound together by a single convalent bond; and

(3) a sensitizing amount of an arylylidene aryl ketone compound of the formulae:



A.

wherein:

A, B, D, E are carbon atoms or one may be solely a nitrogen atom:

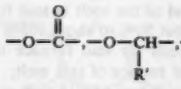
R_1 is H, OH or CH_3O;

R_2 is H, OH, CH_3O or $N(R_6)_2$;

R_3 is H, OH or CH_3O;

a is 0 or 1;

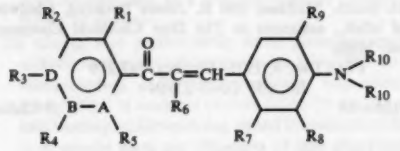
Z is >C=O, CHOH, $>C(CH_3)_2$, $-(CH_2)_{+b}$, wherein b is 1, 2 or 3,



wherein R′ is H, phenyl, or Z is linked with R_4 where Z is

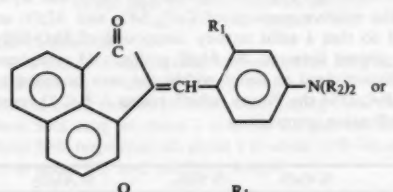
and R_4 is —O— or >N—CH_3 a being O;
R_4 is H, CH_3, OH, CH_3O;
R_5 is H or R_5+R_7 is $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, $—O—CH_2CH_2—$;
R_6 is H or R_6+R_7 is $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, $—O—CH_2CH_2—$; and
R_7 is CH_3, $—(CH_2)_n—CH_3$ where n is 1 to 5, $—CH_2CH_2—Cl$, $—CH_2CH_2OH$, $CH_2CH_2OCH_3$;

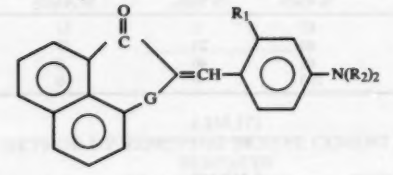
B.



wherein:
A, B, D are carbon atoms or one may be solely a nitrogen atom;
R_1 is H, CH_3, $—OCH_2CH_2OR$, wherein R is H, CH_3, $—CH_2CH_2OR'$ wherein R' is CH_3 or $CH_3CH_2—$;
R_2 is H, CH_3, OH or CH_3O;
R_3 is H, OH, CH_3O, CH_3, F, Br, CN or $N(R_9)_2$;
R_2+R_3 is $—O—CH_2—O—$;
R_4 is H, CH_3 or CH_3O;
R_5 is H, CH_3, $—OCH_2CH_2OR$, wherein R is H, CH_3, $—CH_2CH_2OR'$ wherein R' is CH_3 or $CH_3CH_2—$;
R_6 is H, CH_3 or phenyl;
R_7 is H, CH_3, OH or CH_3O;
R_8 is H;
R_8+R_{10} is $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, $—OCH_2CH_2$;
R_9 is H, R_9+R_{10} is $—CH_2CH_2—$, $—CH_2CH_2CH_2—$, $—OCH_2CH_2—$; and
R_{10} is CH_3, $-(CH_2)_nCH_3$ wherein n is 1 to 5; and

C.





wherein
G is

—O—, or —S—;
R_1 is H, CH_3 or $—OCH_3$, and
R_2 is CH_3 or $—CH_2CH_3$,
the ketone having its maximum absorption in the range of 350 to 550 nm.

4,162,163

COATING FOR GOLD OR GOLD ALLOY CASTINGS FOR DENTAL BRIDGES AND CROWNS

John C. Subelka, Plainsboro, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Filed Jan. 18, 1978, Ser. No. 870,390
Int. Cl.[2] C09D *5/38*
U.S. Cl. 106—1.13 **10 Claims**

1. A powder-liquid system consisting of two separate components which are mixed for preparing dispersions useful for coating gold and gold alloy castings for dental bridges and crowns the first component consisting of a gold powder having an average particle size of from 5 to 16 μm and, as the second component, a liquid vehicle suitable for dispersing said gold powder consisting of a solution of an alkali metal or alkaline earth metal borate salt and a stannous tin salt in an organic solvent selected from the group consisting of glycerine, ethylene glycol and propylene glycol.

4,162,164

CYANINE DYE BASED HIGH SATURATION SYMPATHETIC INK HAVING TIME DELAYED DISAPPEARANCE

An-Chung R. Lin, Fairport, N.Y., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 13, 1977, Ser. No. 796,622
Int. Cl.[2] C09D *11/00, 11/02*
U.S. Cl. 106—21 **5 Claims**

1. A high saturation disappearing sympathetic ink having a time delayed disappearance consisting essentially of:
a solvent, and,
a reactive additive consisting of 1.7 to 8% by weight of the ink, the reactive additive consisting essentially of a pH acid base indicator cyanine dye consisting of 9% to 42% by weight of said reactive additive and the remaining portion of the reactive additive consisting of an effective solvent soluble acid chosen from a group consisting of citric acid, tartaric acid, oxalic acid, acetic acid, formic acid, phosphorous acid, phosphoric acid, zinc chloride, aluminum chloride, stannic chloride and mixtures thereof;
said solvent consisting essentially of the remainder of the ink by weight, the solvent being chosen from the group in which said acids are soluble and consisting of methyoxy triethylene glycol, triethylene glycol, diethylene glycol, tetraethylene glycol, ethylene glycol, phenol ethylene glycol ether, butoxy diethylene glycol, butoxy triethylene glycol, ethylene glycol monobutyl ether and diethylene glycol monobutyl ether and butyl alcohol and benzyl alcohol and methyl alcohol and mixtures thereof, and
wherein said ink remains 50% visible 5 minutes after application of the ink to paper and disappears to a less than 20% visibility eight hours from printing and on exposure to air.

4,162,165

PROCESS FOR THE PRODUCTION OF MICROCAPSULAR COATING COMPOSITIONS CONTAINING PIGMENT PARTICLES AND COMPOSITIONS PRODUCED THEREBY

Gerhart Schwab, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Filed Jun. 16, 1977, Ser. No. 807,250
Int. Cl.[2] C09D *11/00*
U.S. Cl. 106—21 **13 Claims**

1. A process for the production of hot melt coating compositions containing microcapsules and inorganic pigment particles comprising:
(a) preparing an aqueous dispersion of microcapsules;
(b) adding inorganic pigment particles to said aqueous dispersion of said microcapsules with mixing, said inorganic pigment particles being added in an amount from about 0.1% to about 20% by weight based on the weight of said microcapsules;

(c) spraying said dispersion of said microcapsules and said inorganic pigment particles into a heated atmosphere, thereby drying said dispersion and producing a free-flowing powder of said microcapsules, said inorganic pigment particles being substantially deposited on and adhered to said microcapsules; and

(d) dispersing said free-flowing powder of said microcapsules having said inorganic pigment particles deposited thereon in a liquid hot melt suspending medium.

4,162,166

POROUS, LIGHTWEIGHT, PARTICULATE AGGREGATES AND PROCESS OF MANUFACTURE

Jose Walls-Muycelo, Dakota 222-100, Mexico, Mexico (18)

Continuation of Ser. No. 718,276, Aug. 27, 1976, abandoned. This application May 1, 1978, Ser. No. 901,873

Claims priority, application Mexico, Aug. 27, 1975, 160361

Int. Cl.[2] C04B *31/02*

U.S. Cl. 106—40 R **18 Claims**

1. A porous lightweight particulate aggregate comprising expanded and vitrified low alkalinity particles having a density of not more than about 60 g/dm^3, a compression strength of from about 195 to about 275 Kg/cm^2, a temperature resistance without undue fusion or deformation up to about 1250° C. and an expansion ratio of up to about 15 times the original volume of said particles, said expanded and vitrified low alkalinity particles having been obtained by heating and firing dried particles of the composition comprising an alkali metal silicate having an M_2O/SiO_2 ratio of from about 1:2 to about 1:4 wherein M is an alkali metal, from about 0.1 to about 50% by weight of said alkali metal silicate of silica, from about 0.1 to about 200% by weight of said alkali metal silicate of an alkaline earth metal silicate, and from about 0.1 to about 30% by weight of said alkali metal silicate of boric acid which upon firing produces a silicate-tetraborate glass.

4,162,167

PROCESS AND AN APPARATUS FOR PRODUCING SILICON CARBIDE CONSISTING MAINLY OF BETA-TYPE CRYSTAL

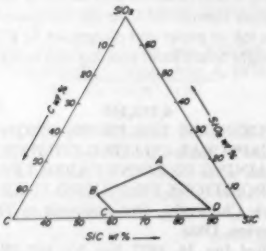
Ryo Enomoto, Ohgaki; Mitihiro Yoshioka, Yoro, and Takao Yokoyama, Ohgaki, all of Japan, assignors to Ibigawa Electric Industry Co., Ltd., Gifu, Japan

Filed May 16, 1977, Ser. No. 797,609

Claims priority, application Japan, May 24, 1976, 51-60501; May 26, 1976, 51-61432

Int. Cl.[2] C04B *35/56*; C01B *31/36*

U.S. Cl. 106—44 **6 Claims**



1. A process for producing silicon carbide consisting mainly of β-type crystal, comprising preparing a starting material by blending silica and carbon in a mole ratio of C/SiO_2 of 3.2–5.0; charging the starting material into a top portion of a vertical-type reaction vessel having a preheating zone, a heating zone and a cooling zone in this order, said heating zone having a filling width l of from 0.10 to 0.35 m; descending the charged starting material by gravity through the preheating zone to the heating zone, the descending rate U in m/hr of said charged starting material at the inlet of said heating zone being $\exp(-7.16\ l+0.39) \leqq U \leqq \exp(-4.63\ l+1.72)$; heating the starting material in the heating zone at a temperature of 1,600°–2,000° C. by electrically indirect heating in a horizontal direction to effect formation of silicon carbide; cooling the resulting reaction product in the cooling zone under a non-oxidizing atmosphere; and then recovering the cooled product from the bottom portion of the reaction vessel to obtain a product having a composition ratio by weight of silicon carbide, silica and free carbon which lies within the area represented by the area ABCD shown in FIG. 1 of the accompanying drawings.

4,162,168

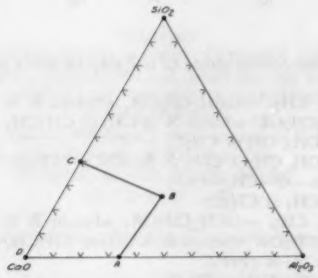
REFRACTORY MATERIAL

Russell D. Smith, Midland, and R. James Bushong, Gladwin, both of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 3, 1976, Ser. No. 747,278

Int. Cl.[2] C04B *35/04*

U.S. Cl. 106—58 **9 Claims**



1. A refractory grain material consisting essentially of at least about 97 percent by weight MgO grains, from about 1 to about 3 percent by weight of a combination of CaO, SiO_2, and Al_2O_3, and up to about 1 percent by weight of at least one oxide selected from the group consisting of Fe_2O_3 and B_2O_3, wherein the relative amounts of CaO, SiO_2 and Al_2O_3 are controlled so that a solid ternary compound of $CaO\text{-}SiO_2\text{-}Al_2O_3$ is present between the MgO grains, said compound further characterized as being within the area bounded by points A-B-C-D in the Figure, which points A-B-C-D represent the following composition:

Point	% CaO	% SiO_2	% Al_2O_3
A	67	0	33
B	40	25	35
C	60	40	0
D	100	0	0

4,162,169

ALKALI-METAL SILICATE BINDERS AND METHODS OF MANUFACTURE

John B. Schutt, Silver Spring, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Dec. 21, 1977, Ser. No. 862,880

Int. Cl.[2] C09D *1/02, 1/04*

U.S. Cl. 106—74 **21 Claims**

1. An inorganic alkali-metal silicate binder consisting essentially of an alkali-metal silicate, silicone and water in the form of a hydrogel sol.

4,162,170

METHOD OF OBTAINING GRANULATED AND DEFLUORATED PHOSPHOGYPSUM

Ivan N. Grancharov; Fanka D. Tudjarova; Yovka P. Bakalova; Yoncho G. Pelovski; Nikola B. Videnov, and Ivan P. Dombalov, all of Sofia, Bulgaria, assignors to Vish Chimiko-Technologicheski Institute, Sofia, Bulgaria

Continuation of Ser. No. 810,985, Jun. 29, 1977, abandoned. This application Aug. 28, 1978, Ser. No. 937,091
Int. Cl.[2] C04B 11/00
U.S. Cl. 106—109 5 Claims

1. A method for the production of granulated and defluorated phosphogypsum for thermal processing which comprises the steps of:

(a) preliminarily drying phosphogypsum, from phosphoric acid manufacture, to a residual moisture content of from 0.5 to 10 percent;

(b) mixing said preliminarily dried phosphogypsum with sulfuric acid of concentration range 55 to 98%, and granulation-binding additives, in solution, said sulfuric acid being added in amounts of from 0.5 to 15 weight parts and said binding additives being added in amounts of from 0.01 to 6 weight parts per 100 parts of said phosphogypsum, said binding additives being selected from the group consisting of carbamide, ammonium nitrate, carboxymethylcellulose, calcium nitrate, polyethylene oxide and the distillation fluids from soda production;

(c) granulating said mixture; and

(d) then heating the granules to a temperature in the range of 170° C. to 700° C. to drive off fluorine-containing gases and to strengthen said granules for subsequent thermal processing in fluidized beds.

4,162,171

VARNISH COMPOSITION

To S. Tse, and Pui Y. Tse, both of 1244 Innes Ave., Los Angeles, Calif. 90026

Filed Dec. 19, 1977, Ser. No. 862,153
Int. Cl.[2] C08L 93/00
U.S. Cl. 106—226 7 Claims

1. A varnish composition which comprises tung oil, pine tar, turpentine oil, tin and lead oxide, the components of said composition being present in an amount ranging from about 35 to about 50% tung oil, about 1 to about 5% pine tar, about 35 to about 50% turpentine oil, about 5 to about 13% tin, and about 0.5 to about 5% lead oxide, by weight.

4,162,172

METHOD OF REMOVING DENTAL CEMENT FROM SURFACES

James J. Longo, Wilmington, Del., assignor to DHP Corporation, Wilmington, Del.

Continuation-in-part of Ser. No. 766,701, Feb. 8, 1977, Pat. No. 4,129,456. This application Feb. 6, 1978, Ser. No. 875,306
Int. Cl.[2] B08B 3/08, 3/12
U.S. Cl. 134—1 7 Claims

1. In a method of removing a hardened zinc oxyphosphate dental cement from a surface, the improvement comprising forming a substantially aqueous or alcoholic solution of citric acid having a concentration of at least 1 gm citric acid per 10 ml of solution, and applying for at least about 3 minutes an amount of said solution to said surface effective to remove said cement.

4,162,173

MOLTEN SALT LEACH FOR REMOVAL OF INORGANIC CORES FROM DIRECTIONALLY SOLIDIFIED EUTECTIC ALLOY STRUCTURES

Ronald H. Arendt; Marcus P. Borom; Irvin C. Huseby, all of Schenectady, and Frederic J. Klug, Amsterdam, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 775,749, Mar. 9, 1977, Pat. No. 4,082,566. This application Sep. 19, 1977, Ser. No. 834,100
Int. Cl.[2] B08B 3/08, 3/10
U.S. Cl. 134—2 8 Claims

1. A method for removing ceramic cores from castings of superalloy materials including the process steps of

(a) preparing a molten leachant salt bath of a mixture of 67 mole percent sodium fluoride and 33 mole percent calcium fluoride leachant salts;

(b) covering the molten leachant salt bath with a controlled atmosphere which has an oxygen content of less than 50 ppm;

(c) immersing the casting and the ceramic core in the molten leachant salt bath;

(d) leaching the core material from the casting in the molten leachant salt bath, and

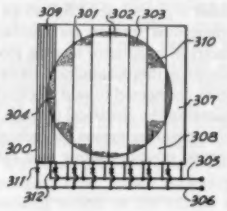
(e) rinsing the casting to remove leachant products from the casting by immersing the casting in a molten salt rinse both having a composition of 9 mole percent NaCl, 36 mole percent KCl, and 55 mole percent LiCl.

4,162,174

SOLAR CELL ARRAY

Roy Kaplow, Newton, and Robert I. Frank, Lexington, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Mar. 10, 1978, Ser. No. 885,217
Int. Cl.[2] H01L 31/04
U.S. Cl. 136—89 PC 13 Claims



1. A semiconductor solar-cell array in combination with means providing a confined concentration of solar radiation on the radiation exposure surfaces of said solar cell array, wherein the area of confined concentration may shift to the extent that tracking mechanism may fail to keep the cell array in continuous precise alignment with the sun, said array comprising a plurality of adjacent solar-cell segments having said radiation-exposure surfaces in a common geometrical surface positioned in said area of confined concentration, the collective overall area of said exposure surfaces being greater than said area of confined concentration, each of said segments comprising a plurality of like series-connected solar-cell units, each of which cell units produces an electrical output upon solar-radiation exposure, and electrical connecting means establishing parallel connection of said segments.

11. A semiconductor solar-cell array in accordance with claim 1, wherein solar-cell segments are generally rectangular and arranged in parallel and disposed into solar-cell groups, each cell group being positioned adjacent to another cell group, all cell groups being mounted on a common support structure, and the parallel solar-cell segments within one cell group being generally perpendicular to the parallel solar-cell segments of an adjacent cell group.

4,162,175

TEMPERATURE SENSORS

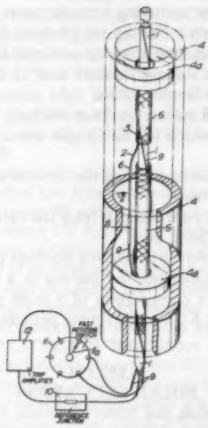
Kenneth J. Salt, Dorchester, and Colin A. Wintle, Wareham, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 16, 1977, Ser. No. 825,048

Claims priority, application United Kingdom, Aug. 18, 1976, 34486/76

Int. Cl.[2] H01L *35/02*

U.S. Cl. 136—233 7 Claims



1. A temperature sensor assembly for measuring the temperature at axially spaced positions along the bore of a tube including at least one stringer for insertion into the tube bore the stringer comprising a central conductor of homogeneous metal, the conductor having an insulated exterior with axially spaced uninsulation regions, metal foil strips attached to said regions, thermojunctions formed on unattached portions of said strips, an electrical conductor leading from the free end of each strip, a reference thermojunction external to said tube, and scanning means connected to said electrical conductors for successively presenting the electrical outputs from said electrical conductors to measuring means for indicating the temperatues at axially spaced positions along said tube as represented by said outputs.

4,162,176

METHOD FOR FORMING FLOATING GATE SEMICONDUCTOR DEVICE BY SELECTIVE ION-IMPLANTATION

Akihito Tsuda, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

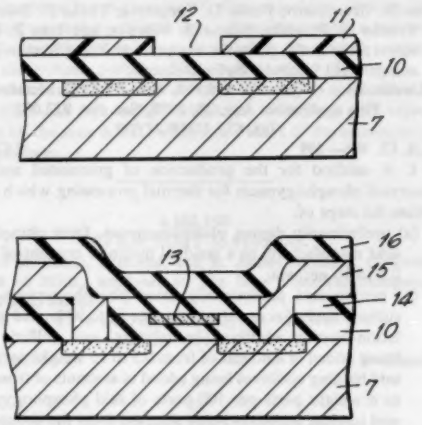
Filed Aug. 19, 1976, Ser. No. 715,767

Claims priority, application Japan, Aug. 22, 1975, 50-102425

Int. Cl.[2] H01L *21/265, 21/324;* B01J *17/00*

U.S. Cl. 148—1.5 15 Claims

1. A method for forming a floating gate semiconductor device having a substrate, source and drain regions formed in spaced relation on the surface of said substrate and an insulating layer on the surface of said substrate at least in the region between said source and drain regions, comprising the steps of providing a substrate of a first conductivity type, forming source and drain regions in spaced relation in said substrate by diffusing impurities of a second conductivity type opposite to said first conductivity type in the surface of said substrate; forming an oxide layer on the surface of said substrate; forming a photo-resist layer on the surface of said oxide before ion implantation, said photo-resist layer having an opening therethrough exposing the surface of said oxide intermediate said source and drain regions of said substrate; and forming a floating gate in the surface of said oxide layer in the region intermediate said source and drain by ion implantation without implanting ions in said substrate or the surface of said oxide layer covered by said photo-resist layer.



4,162,177

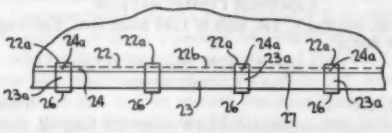
METHOD OF FORMING SOLAR CELL WITH DISCONTINUOUS JUNCTION

Joseph Lindmayer, Bethesda, Md., assignor to Solarex Corporation, Rockville, Md.

Division of Ser. No. 775,961, Mar. 28, 1977, Pat. No. 4,106,047. This application Mar. 6, 1978, Ser. No. 883,972

Int. Cl.[2] H01L *27/14, 29/04, 31/04*

U.S. Cl. 148—179 7 Claims



1. A method of forming a back junction in a silicon solar energy cell having a front surface adapted to receive light impinging thereon and an opposed back surface, comprising applying to the back surface of a silicon wafer a discontinuous coating of a metal capable of forming a back junction, and heating the wafer at a temperature sufficient to cause the discontinuous layer to be alloyed into and penetrate said back surface and form a discontinuous step junction at said surface so that when light impinges on the front surface of the wafer, the cell will generate electricity at a generally constant voltage over a substantial range of light intensities.

4,162,178

REACTIVE CATALYST FOR AMINO RESINS

Andrew C. Markeusini, Salonica, Greece, assignor to Teukros A.G., Basel, Switzerland

Division of Ser. No. 839,248, Oct. 4, 1977. This application Apr. 6, 1978, Ser. No. 893,851

Claims priority, application Greece, Oct. 12, 1976, 10988/51908

Int. Cl.[2] B29J *5/00*

U.S. Cl. 156—62.2 8 Claims

1. In a method of bonding water penetrable lignocellulosic particles with a catalytically polycondensed amino resin, the improvement which comprises curing the amino resin at a

temperature higher than room temperature and sufficient to effect curing in the presence of 1 to 30% by weight of an additional catalyst system, based on the weight of the amino resin and calculated on the basis of 100% solids content, comprising an aqueous solution of a mixture of organic and inorganic components, the organic component being formaldehyde and urea or a nonresinous condensation product of formaldehyde and urea, and the inorganic component being a water soluable alkali metal halide.

2. The improvement defined in claim 1, wherein the additional catalyst system contains the organic and inorganic component in a ratio of 0.1 to 1.5 parts by weight of organic components per 1.0 part by weight of inorganic component, the amount of water depending upon the solubility of the organic and inorganic components and the solids content required for the production system used.

4. The improvement defined in claim 1, wherein the catalyst system is added to the amino resin, together with a catalytically effective amount of ammonium chloride so that the production rates are increased by up to 30 percent while simultaneously allowing up to 30 percent by weight less resin solids to be used without imparting any loss in bonding strength.

4,162,179

REFRACTORY ARTICLE AND METHOD OF MAKING THE SAME

Patsie C. Campana, 2614 Sherwood Dr., Lorain, Ohio 44053

Division of Ser. No. 748,451, Dec. 8, 1976, Pat. No. 4,135,939. This application Oct. 13, 1978, Ser. No. 951,128

Int. Cl.[2] C04B *37/00*

U.S. Cl. 156—89 **4 Claims**

1. A method of forming a monolithic lining in a receptacle for receiving molten metal comprising:

providing a lining including a plurality of refractory articles composed of from about 50 to about 70 weight percent fine silica sand particles, said fine silica sand particles having an average particle size ranging from about 0.06 to about 0.10 mm.; from about 10 to about 30 weight percent coarse silica sand particles, said coarse silica sand particles having a maximum particle size of about 3.0 mm.; and from about 15 to about 30 weight percent of an alumina containing clay binder, with the total content of alumina in said unfired article ranging from about 6.0 to about 9.0 weight percent; and

heating said lining to a temperature sufficient to cause at least the surface of said refractory articles to become plastic so as to bond juxtaposition refractory articles together.

4,162,180

PRODUCING EMBOSSED WALL- OR CEILING-COVERING OF CELLULOSIC PULP AND TWO DIFFERENT DISCRETE THERMOPLASTIC MATERIALS

Arthur Burton, Tameside, and Roy Conway, Dukinfield, both of England, assignors to Imperial Chemical Industries Limited, London, England

Filed Mar. 14, 1977, Ser. No. 777,425

Claims priority, application United Kingdom, Mar. 30, 1976, 12736/76

Int. Cl.[2] B31F *1/08*; B32B *31/00*; D02G *3/00*

U.S. Cl. 156—220 **4 Claims**

1. A method of producing an embossed wall- or ceiling-covering comprising the steps of:

providing a sheet containing from 10 to 90% by weight of cellulosic pulp fibres and from 10 to 90% by weight of discontinuous fibres of two different discrete synthetic thermoplastic polymeric materials, the fibres of the two different materials being independent,

heating the sheet to a temperature intermediate the temperatures of plasticity of the two different thermoplastic materials so that the fibres of one of the thermoplastic materials are rendered plastic and fuse together, the other thermoplastic material retaining its fibrous structure, and

embossing the sheet while still hot from said heating step.

4,162,181

LABELING STATION OF A MACHINE FOR LABELING OBJECTS, ESPECIALLY BOTTLES

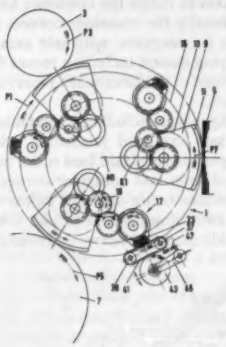
Rudolf Zodrow, Dusseldorf, Fed. Rep. of Germany, assignor to Jagenberg-Werke Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Jan. 11, 1978, Ser. No. 868,557

Claims priority, application Fed. Rep. of Germany, Jan. 18, 1977, 2701808

Int. Cl.[2] B65C *9/08*; B41M *1/00*

U.S. Cl. 156—384 **9 Claims**



1. A labeling station in a machine of the type for labeling objects, especially bottles, and having a plurality of successively disposed stations, comprising a gluing means, a labeling magazine station having an upper portion for holding flat labels and a label transfer station, said labeling station comprising: at least one pickup element for labels having an outwardly curved receiving surface, a revolving carrier, means rotatably mounting each pickup element on the carrier and between the pickup surface and the center of curvature, means driving each pickup element such that upon moving past the stations upon each revolution of the carrier, its receiving surface rolls against the upper flat label of the label magazine station, marking means associated with each pickup element and having a field for at least one marking type, means rotatably and pivotally mounting each marking means on the carrier and for driving same synchronously with the associated pickup element wherein the pivot point thereof is diametrically opposite the type field, the radius of curvature of the type field and the eccentricity of the mounting of the pivot point of the marking means is coordinated with the circulation path of the area to be printed on the pickup element to effect the rolling of the type field upon the receiving surface of the pickup element.

4,162,182

LABELING MACHINE FOR APPLYING LABELS TO POLYGONAL CONTAINERS

John G. Wesley, Berwyn, Ill., assignor to Labelette Company, Forest Park, Ill.

Continuation of Ser. No. 682,641, May 3, 1976, abandoned. This application Sep. 21, 1977, Ser. No. 835,442

Int. Cl.[2] B65C *3/12*

U.S. Cl. 156—487 **2 Claims**

1. In a labeling machine for applying labels to containers of quadrilateral transverse cross-sectional configuration and defining external side walls forming external corners extending longitudinally thereof along the sides of the container, said machine including a label supply hopper, a glue applying station, and a labeling station including means for supporting and rotating the container to be labeled about a horizontal axis

at the labeling station with the container longitudinal axis coincident with said horizontal axis, and means for feeding labels longitudinally thereof along a predetermined feed path from the hopper through the glue applying station to a label applying relation position with the container at the labeling station, the improvement wherein:

said means for supporting and rotating the container comprises:

a pair of spaced apart holder members journalled for rotation about said axes,

means for holding said holder members against movement laterally of said axes,

said holder members including means for mounting one of the containers therebetween by engaging the ends thereof for rotating same about said axes,

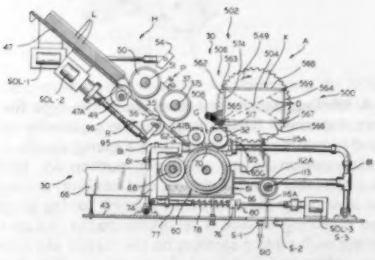
means for synchronously rotating said holder members about said axes to rotate the container held thereby about said axes whereby the container corners rotate in a circular path that is concentric with said axes,

said glue applying station including means for applying glue to the underside of the label when received from said label supply station,

and said feeding means including a rotatable label feed roller paralleling said axes and journalled relative thereto to dispose the periphery of said feed roller in close adjacency to but spaced from said container corner circular path,

said feed roller also being disposed below the level of said axes and in overlying relation to said feed path,

a label feed guide mounted below said feed roller and including guide surfacing concentric with said feed roller periphery and disposed to direct the leading end of a label to be applied to the container to the label applying position,



means for rotating said feed roller oppositely of the direction of rotation of said holder members at a speed whereby said feed roller periphery has a surface speed approximating the speed of the container corners along said circular path,

and including a label wiping device mounted between said container supporting means and the hopper above and adjacent to said feed roller and comprising:

a brush member mounted to parallel said axes and including a projecting brush flap,

said flap being proportioned and positioned for wiping engagement with the side walls of the container mounted by said holder members, adjacent the label applying position, when the container is supported by said supporting means,

means for maintaining said brush member flap in biased relation against the container side walls when said holder members are rotated,

said rotating means rotating said holder members in the direction that moves the container corners consecutively past said feed roller and said brush member in that order,

whereby, when a container to be labeled is rotated by said holder members and a label to be applied to the container is moved to said label applying relation position, the label is wiped on the container about said side walls and corners thereof by the wiping engagement of the brush member flap with the container,

and means for oscillating said brush member sidewise of said flap during rotation of said holder members, while said flap is maintained in engagement with the container, when the leading end of the label is being applied to the container engages the container, whereby the label leading end is subjected to an oscillating brushing action of said flap thereagainst and against the container.

4,162,183

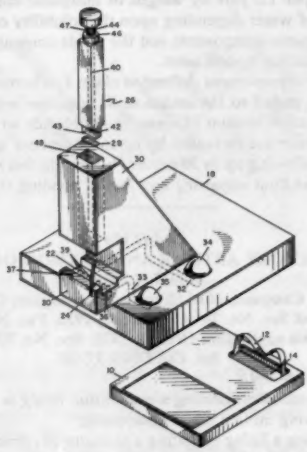
MAGNETIC TAPE SPLICER

Allen C. Estes, Box 357B, Sebago Lake, Me. 04075

Filed Feb. 6, 1978, Ser. No. 875,324

Int. Cl.[2] **B29C** *27/00;* **G03D** *15/04*

U.S. Cl. 156—505 **1 Claim**



1. A device for splicing cartridge-held magnetic tape utilizing splicing tape segments and wherein said magnetic tape is accessible through an opening in said cartridge, comprising:

a splicing block adapted to be of a width less than the width of the access opening of said cartridge to said magnetic tape;

a tape guideway disposed in said splicing block having a bottom and sides;

a cutter guide slot defined in said splicing block within the sides of said tape guideway;

a first set of air ports defined in said tape guideway's bottom positioned to one side of said cutter guide slot;

a second set of air ports defined in said tape guideway's bottom positioned to the opposite side of the guide slot relative to said first set of air ports;

a first vacuum means adapted to create a suction through said first set of air ports;

a second vacuum means adapted to create a suction through said second set of air ports independently of said first vacuum means;

a splicing tape segment holder having a base with at least one air hole defined therein;

a third vacuum means adapted to create a suction through said air hole in order to hold a splicing tape segment to said base to join magnetic recording tape ends when said splicing tape segment holder when holding a splicing tape segment is maneuvered into a position so that said splicing tape segment contacts the magnetic tape ends to be joined; and

a base member having a top, a front side, and downwardly projecting a rear side with said splicing block affixed at said front side disposed above the area for positioning of the magnetic tape cartridge so that the magnetic tape, after being placed in said tape guideway, is not laterally displaced from its vertical extension out of said cartridge, said base member further having defined therein a magnetic tape cartridge receipt aperture adapted to receive a

magnetic tape cartridge in a position so that its magnetic tape can be placed in said tape guideway when the rear of said magnetic tape cartridge makes contact with and is prevented from further rearward movement by said downwardly projecting rear side so as to cause the desired alignment of said magnetic tape beneath said tape guideway.

4,162,184

PRODUCING LAYERED PENTA-ULTRAPHOSPHATE MONOCRYSTALS

Wolfgang Kruehler, Unterhaching, and Rolf Plaettner, Ottobrunn, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,782

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1976, 2639221

Int. Cl.[2] B01J *17/06*

U.S. Cl. 156—621 **11 Claims**

1. A process for the producing a monocrystalline penta ultraphosphate layer on a monocrystalline penta ultraphosphate substrate comprising the steps of

(A) mixing a starting material consisting essentially of neodymium oxide and yttrium oxide with phosphoric acid at the rate of at least about 0.2 grams of said starting material for each 10 grams of said phosphoric acid, the mol ratio of neodymium oxide to yttrium oxide in any given said starting material being defined by the relationship:

$$\frac{(1-x)\ \text{Mol}\ Nd_2O_3}{x\ \text{Mol}\ Y_2O_3}$$

where x is a number between 0 and 1,

(B) first heating the resulting mixture to a temperature ranging from about 160° to 200° C. for a time sufficient to substantially completely dehydrate said phosphoric acid,

(C) secondly heating the resulting so heated mixture to a temperature ranging from about 360° to 430° C. for a time sufficient to substantially completely dissolve all compounds present of neodymium and yttrium in said phosphoric acid,

(D) thirdly heating the resulting solution mixture to a temperature ranging from about 450° to 550° C. for a time of from about 10 to 15 hours,

(E) introducing into the so heated solution mixture the (0,0,1) face of a preformed monocrystalline substrate having the chemical structure:

$$Gd_{1-z}Y_zP_5O_{14}$$

where z is a number between 0 and 1,

(F) maintaining the resulting mixture with said substrate so introduced thereinto at said temperature ranging from about 450° to 550° C. for a time sufficient to epitaxially grow on said one substrate face a monocrystalline layer which consists of a compound having the chemical structure:

$$Nd_{1-x}Y_xP_5O_{14}$$

where x is a number between 0 and 1, and

(G) separating a product comprising said substrate and said layer from residual phosphoric acid.

4,162,185

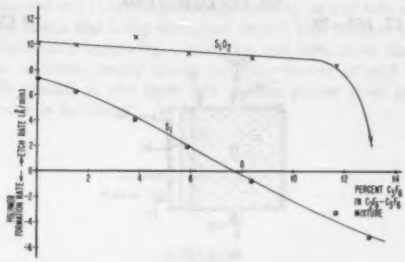
UTILIZING SATURATED AND UNSATURATED HALOCARBON GASES IN PLASMA ETCHING TO INCREASE ETCH OF SiO_2 RELATIVE TO SI

John W. Coburn, and Harold F. Winters, both of San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1978, Ser. No. 888,882

Int. Cl.[2] C23F *1/00*

U.S. Cl. 156—643 **9 Claims**



1. A method of adjusting the SiO_2/Si etch rate ratio in an article having both SiO_2 and Si in a plasma etching system comprising the steps of

introducing a controllable flow rate of a saturated halocarbon gas into a plasma etching system,

introducing a controllable flow rate of an unsaturated halocarbon gas into said plasma etching system to mix with the saturated hydrocarbon gas and form a plasma, and

adjusting the relative flow rates of the saturated halocarbon and the unsaturated halocarbon gases to control the SiO_2/Si etch rate ratio.

4,162,186

ALKALINE SURFACTANT SYSTEM FOR DE-INKING PRINTED FIBROUS MATERIAL

Donald C. Wood, Des Plaines, and Robert L. McLaughlin, Wilmette, both of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 750,850, Dec. 15, 1976, abandoned. This application Feb. 23, 1978, Ser. No. 880,660

Int. Cl.[2] D21C *5/02*

U.S. Cl. 162—5 **19 Claims**

1. A process for de-inking printed fibrous material which comprises the steps of:

(a) adding said printed fibrous material in substantially dry form to an aqueous, surfactant-containing de-inking solution in an amount to form a slurry containing no more than about 10 weight percent of fibrous material solids, the aforesaid surfactants constituting a mixture of at least one water-soluble nonionic surfactant and at least one oil-soluble nonionic surfactant present in said slurry in an amount of about 0.1 to about 5 weight percent, based on the weight of said fibrous material solids, the weight ratio of said water-soluble nonionic surfactant to said oil-soluble nonionic surfactant in said mixture being in a range of about 6:1 to about 3:1, said water-soluble nonionic surfactant being ethoxylated aliphatic alcohols containing from 9 to 15 carbon atoms and having an average of about 7 to about 15 ethyleneoxy units per mole of alcohol, and said oil-soluble nonionic surfactant being ethoxylated aliphatic alcohols containing from 9 to 15 carbon atoms and having an average of about 0.5 to about 3.5 ethyleneoxy units per mole of alcohol; and

(b) agitating said slurry at a temperature in the range of about room temperature to about the boiling temperature of the solution to reduce said fibrous material substantially to individual fibers and to separate the ink present on the fibers therefrom.

4,162,187

PROCESS FOR PRODUCTION OF SODIUM THIOSULFATE AND SODIUM HYDROXIDE

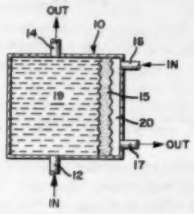
Glen C. Smith, and Frederick W. Sanders, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Continuation-in-part of Ser. No. 468,471, May 9, 1974, Pat. No. 4,024,229, which is a continuation-in-part of Ser. No. 87,504, Nov. 6, 1970, abandoned. This application May 12, 1977, Ser. No. 796,078

The portion of the term of this patent subsequent to May 17, 1994, has been disclaimed.

Int. Cl.[2] D21C *11/04*

U.S. Cl. 162—29 7 Claims



1. In a process for the oxidation of sodium sulfide or sodium hydrosulfide, the steps consisting essentially of: (1) providing a gaseous oxidant, an aqueous reductant containing sodium sulfide or sodium hydrosulfide, and particulate activated carbon having a particle size of between 9 millimicrons and one inch and having a surface area of from 3 square meters per gram to in excess of 950 square meters per gram (BET), and which has been partially encapsulated with 0.1–100% by weight of carbon of a polytetrafluoroethylene resin, said oxidant and reductant being capable of forming an interface when brought into contact with each other, said partially encapsulfated carbon particles being relatively free from chemical attack by said oxidant, said reductant, and the reaction products, and (2) bringing said oxidant, reductant and paritally encapsulated carbon particles into contact with each other, thereby effecting the oxidation of sodium sulfide or sodium hydrosulfide to produce a sodium thiosulfate and sodium hydroxide containing solution.

4,162,188

PROCESS FOR PRODUCING PULP

Masato Nakamura; Yoshika Nomura, and Tamio Katori, all of Tokyo, Japan, assignors to Honshu Seishi Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 30, 1977, Ser. No. 829,005

Claims priority, application Japan, May 18, 1977, 52/57275

Int. Cl.[2] D21C *3/02*

U.S. Cl. 162—76 12 Claims

1. A process for the production of pulp comprising the step of cooking lignocellulosic materials in an alkaline or a sulfite-containing cooking liquor, in the presence of between 0.005 and 1% by weight of a compound selected from the group consisting of maleic acid, sodium maleate, potassium maleate, maleic anhydride, fumaric acid, sodium fumarate, potassium fumarate, mesaconic acid and sodium mesaconate to improve pulp quality and pulp cooking yield.

4,162,189

PAPER MACHINE HAVING A HEADBOX PROVIDED WITH AN AIR TANK

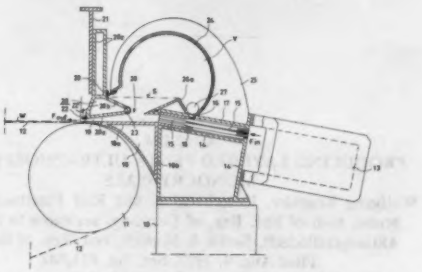
Alvi Kirjavainen, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Apr. 7, 1978, Ser. No. 894,493

Claims priority, application Finland, Apr. 15, 1977, 771209

Int. Cl.[2] D21F *1/02*

U.S. Cl. 162—337 12 Claims



1. In a paper machine, a headbox comprising slice means through which a pulp suspension discharges from the headbox, distribution header means for receiving the pulp suspension and distributing the same, turbulence passage means comprising a turbulence passage member having a plurality of parallel flow passages each being of relatively small cross section, the downstream ends of said passages communicating with said distribution header means and the upstream ends of said passages terminating in the vicinity of said slice means so that the pulp suspension is received from said distribution header means and travels through said parallel flow passages along a path of flow from the distribution header means toward said slice means, and air-tank means for containing air under pressure which acts on the flowing pulp suspension in the space defined between the upstream ends of said parallel flow passages and said slice means as the pulp suspension travels toward said slice means for attenuating pressure fluctuations and disturbances in the pulp suspension, said air-tank means being operatively connected with said slice means immediately adjacent thereto for acting on the pulp suspension flow in the immediate vicinity of said slice means.

4,162,190

PAPER MAKERS WET FELTS

Gordon Ashworth, Burnley, England, assignor to Scapa-Porritt Limited, Blackburn, England

Continuation of Ser. No. 633,106, Nov. 18, 1975, abandoned, which is a continuation of Ser. No. 465,315, Apr. 29, 1974, abandoned. This application Aug. 8, 1977, Ser. No. 823,020

Int. Cl.[2] D21F *7/08, 7/12*

U.S. Cl. 162—359 9 Claims

1. In a papermaking apparatus of the type having a movable endless belt conveying a wet web of paper between a pair of pressure rollers for driving water out of said web and then passing said web to a drying zone for removing additional water from said web, the improvement wherein said belt comprises:

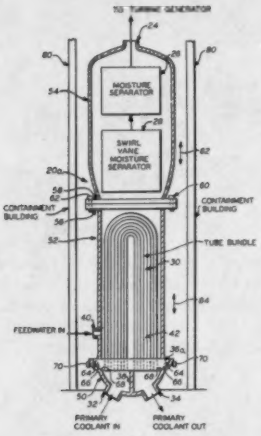
a surface layer formed from water absorbent non-woven fibrous material, and a backing layer coarser than the surface layer and formed from water absorbent wads of separate fibers, said surface layer having hydrophobic properties in that said surface layer has a critical surface tension less than 33 dynes/cm, and said surface layer being held in intimate contact with said backing layer with fibers of said surface layer penetrating and needled into said backing layer to integrate said layers so that water forced into said surface layer by said pressure rollers is readily taken up by both said layers to be retained thereby.

4,162,191

MODULAR STEAM GENERATOR FOR USE IN NUCLEAR POWER PLANTS

Alexander Cella, Robinwood Dr., Great Notch, N.J.

Filed Apr. 29, 1977, Ser. No. 792,195
Int. Cl.[2] G21C *19/28*
U.S. Cl. 176—65 **8 Claims**



1. In a steam generator for use in a pressurized water nuclear power plant in which a turbine generator is driven by the steam output of said steam generator to provide electrical power therefrom, wherein said steam generator comprises a vertically extending hollow outer housing having an upper housing portion and a lower housing portion, with said upper housing portion having a steam outlet therein communicable with the turbine generator for providing steam generated within said steam generator to said turbine generator and a moisture separator means within the interior thereof in communication with said steam outlet for drying the generated steam provided to said steam outlet, and with said lower housing portion having heat exchange fluid and feedwater inlets and a vertically extending tube bundle within the interior thereof in flow through communication with said heat exchange fluid inlet for enabling heat exchange fluid provided through said inlet therefor to flow through said tube bundle for providing said generated steam from feedwater provided through said inlet therefor, said tube bundle having a tube sheet at one end thereof for supporting said tube bundle with the tubes comprising said tube bundle extending through said tube sheet in said flow through communication with said heat exchange fluid inlet; the improvement comprising a base module, a tube bundle module removably mountable on said base module in sealing relationship therewith, and an uppermost dryer module removably mountable on said tube bundle module in sealing relationship therewith for providing a vertically assemblable modular structure for said steam generator, said vertically assembled base module and tube bundle module comprising said lower housing portion, and said dryer module comprising said upper housing portion, said dryer module having said steam outlet at one end thereof and a closure flange at the other end thereof and having said moisture separator means within the interior thereof, said tube bundle module having a closure means at the upper end thereof and a closure flange at the lower end thereof and containing said tube bundle within the interior thereof with said tube sheet comprising said lower end closure flange, said dryer module closure flange and said tube bundle module upper closure means effectuating said sealing relationship between said tube bundle module and said dryer module, said base module uppermost portion comprising an outer shell having an arcuately tapered interior wall forming an arcuate lip portion with said base module having said heat exchange fluid inlet therein, said tube bundle in said vertically assembled tube bundle module being in said flow through communication with said heat exchange fluid inlet, the exterior surface of said tube sheet closure flange being arcuately tapered complementary to said base module outer shell interior wall arcuately tapered portion and removably insertable therein in self-supporting bearing relationship against said lip portion for effectuating said sealing relationship between said tube bundle module and said base module essentially as a result of the associated weight of said vertically assembled dryer module and said tube bundle module bearing on said tube sheet closure flange and being supported on said base module while simultaneously facilitating closure by said tube sheet closure flange, whereby ready access to and removal of said tube bundle module in situ from said nuclear power plant steam generator is facilitated.

4,162,192

METHOD FOR PURIFICATION OF HBS ANTIGEN

Kyosuke Mizuno; Atsushi Miyanohara; Yoshimitsu Ishihara, and Nobuya Ohtomo, all of Kumamoto, Japan, assignors to Juridical Foundation, Kumamoto, Japan

Filed Sep. 28, 1978, Ser. No. 946,733
Int. Cl.[2] A61K *39/12*
U.S. Cl. 435—239 **4 Claims**

1. A method for purification of HBs antigen, which comprises passing an HBs antigen-containing solution prepared from blood plasma or serum through an anion exchanger and then passing the resulting effluent through a cation exchanger.

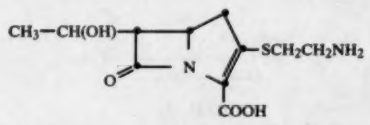
4,162,193

ENZYMATIC CLEAVAGE OF N-ACYL-THIENAMYCINS

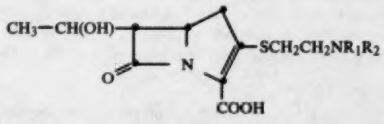
Jean S. Kahan, and Frederick M. Kahan, Rahway, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Aug. 19, 1977, Ser. No. 825,883
Int. Cl.[2] C12D *13/06*
U.S. Cl. 43—121 **5 Claims**

1. A method for the preparation of thienamycin having the structure:



which comprises bringing into contact a compound having the formula:



wherein R_1 and R_2 are independently selected from the group consisting of hydrogen and acyl radical wherein R_1 and R_2 are not both hydrogen, with a penicillin amidohydrolase, which contact causes the removal of the acyl radical.

4,162,194

KINETIC ASSAY FOR ACID PHOSPHOTASE AND COMPOSITION THEREFORE

Kenneth J. Pierre; Ker-Kong Tung, and Henriette Nadj, all of Vista, Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Division of Ser. No. 758,518, Jan. 11, 1977, Pat. No. 4,097,336, which is a continuation-in-part of Ser. No. 657,976, Feb. 13, 1976, Pat. No. 4,036,697. This application Dec. 12, 1977, Ser. No. 859,411

Int. Cl.[2] G01N *31/14, 33/16*

U.S. Cl. 435—15 **19 Claims**

1. A reagent system for an acid phosphotase assay comprising:

(a) maltose;

(b) an organic phosphate selected from a group consisting of β-glycerophosphate, phenol phosphate, p-nitrophenol phosphate, alpha-naphthyl phosphate, adenosine-3′-monophosphate, thymolphthalein monophosphate, and phenolphthalein monophosphate;

(c) maltose phosphorylase;

(d) a co-enzyme selected from a group consisting of beta-nicotinamide-adenine dinucleotide, beta-nicotinamide-adenine dinucleotide phosphate, and mixtures thereof;

(e) glucose-6-phosphate dehydrogenase;

(f) beta-D-phosphoglucomutase; wherein the above are present in the amount such that the acid phosphatase to be assayed is rate-limiting, and

(g) a non-phosphate containing buffer having a pH from about 4.5 to about 6.

12. An acid phosphatase assay comprising:

(a) performing simultaneous reactions at a pH of from about 4.5 to about 6 which comprise:

(i) reacting an organic phosphate selected from a group consisting of beta-glycerophosphate, phenyl phosphate, p-nitrophenyl phosphate, alpha-naphthyl phosphate, adenosine-3′-monophosphate, thymolphthalein monophosphate, and phenolphthalein monophosphate in the presence of acid phosphatase to release inorganic phosphate;

(ii) reacting maltose with phosphate ions in the presence of maltose phosphorylase to form glucose and β-D-glucose-1-phosphate;

(iii) reacting β-D-glucose-1-phosphate in the presence of β-D-phosphoglucomutase to form glucose-6-phosphate; and

(iv) reacting glucose-6-phosphate in the presence of glucose-6-phosphate dehydrogenase and a co-enzyme selected from a group consisting of β-nicotinamide-adenine dinucleotide, β-nicotinamide-adenine dinucleotide phosphate, and mixtures thereof to form the reduced form of said co-enzyme and 6-phosphogluconate; and

(b) measuring the rate of production of said reduced co-enzyme,

wherein the acid phosphatase being measured is rate-limiting and wherein a non-phosphate buffer is used to control said pH.

4,162,195

BIOLOGICAL TESTING DEVICE AND METHOD OF MEASURING TOXICITY OF SEWAGE

Peter Solyom, Stockholm; Bengt Boman, Akersberga, and Håkan Björndal, Norsborg, all of Sweden, assignors to Aktiebolaget Källe-Regulatorer, Saffle, Sweden

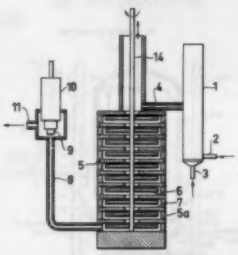
Continuation-in-part of Ser. No. 564,552, Apr. 2, 1975, abandoned. This application Oct. 28, 1977, Ser. No. 846,454

Claims priority, application Sweden, Apr. 4, 1974, 7404556

Int. Cl.[2] G01N *33/18*

U.S. Cl. 43—310 **10 Claims**

1. A biological testing device for measuring the toxicity of a sewage sample, comprising an aerating means for dissolving oxygen into the sample to form an aerated sample, an enclosure adapted to be completely filled with and completely enclose said aerated sample and containing interspaced interfacing surfaces which are substantially parallel to each other and adapted to support biological films of microorganisms completely submersed in the aerated sample, said surfaces being spaced from each other so as to cause said films to form a biological mass between said surfaces and said surfaces being movable relative to each other in directions causing said films



to abrade each other so as to maintain said mass at a thickness substantially fixed by the interspacing distance of the surfaces, means for completely filling said enclosure with said aerated sample, and means for measuring the oxygen content of said sample after a residence time in said enclosure.

4,162,196

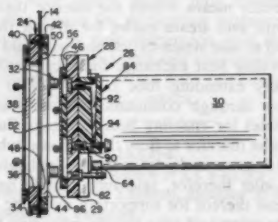
ADAPTOR COLLAR

Max H. Folsom, Portland, Oreg., and Michael D. Dickman, Philadelphia, Pa., assignors to National Appliance Company, Portland, Oreg.

Filed Nov. 24, 1976, Ser. No. 744,611

Int. Cl.[2] C12K *1/10*

U.S. Cl. 435—313 **13 Claims**



1. An adaptor collar which attaches to a receptacle to form a portable transport unit for transporting objects between remote locations and an airtight controlled atmosphere chamber and for maintaining objects in a controlled atmosphere during transporting comprising:

a main frame member having a clamping surface, a receptacle receiving surface adapted to detachably receive the mouth of a jar-like receptacle and a central passageway extending through said main frame member from said clamping surface to a position on said receptacle receiving surface where said passageway will register with the mouth of a receptacle received by said recepticle receiving surface;

door means, on said clamping surface, repeatedly alternately positionable between a closed position, wherein said central passageway is blocked, and an open position, wherein objects may be passed through said passageway; and

inlet means adapted to admit a stream of gaseous medium into said passageway at a point between said door means and said receptacle receiving surface.

4,162,197

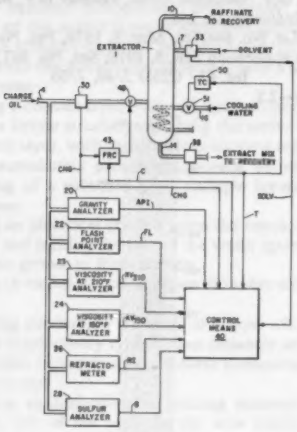
FURFURAL REFINING UNIT CONTROL SYSTEM

Avilino Sequeira, Jr.; John D. Begnaud, and Frank L. Barger, all of Port Arthur, Tex., assignors to Texaco Inc., New York, N.Y.

Continuation of Ser. No. 851,999, Nov. 16, 1977, abandoned. This application Jun. 5, 1978, Ser. No. 912,909

Int. Cl.[2] C10G *21/00;* C06G *7/58*

U.S. Cl. 196—14.52 15 Claims



1. A control system for a furfural refining unit receiving charge oil and furfural solvent, one of which is maintained at a fixed flow rate while the flow rate of the other is controlled by the control system, treats the received charge oil with the received furfural to yield means for sampling the charge oil and providing a signal API corresponding to the API gravity of the charge oil, flash point analyzer means for sampling the charge oil and providing a signal FL corresponding to the flash point temperature of the charge oil, viscosity analyzer means for sampling the charge oil and providing signals KV_{150} and KV_{210} corresponding to the kinematic viscosities, corrected to 150° F. and 210° F., respectively, sulfur analyzer for sampling the charge oil and providing a signal S corresponding to the sulfur content of the charge oil, a refractometer samples the charge oil and provides a signal RI corresponding to the refractive index of the charge oil, flow rate sensing means for sensing the flow rates of the charge oil and of the furfural and providing signals CHG and SOLV, corresponding to the charge flow rate and the furfural flow rate, respectively, means for sensing the temperature of the extract-mix and providing a corresponding signal T, and control means connected to all of the analyzer means, the refractometer, and to all the sensing means for controlling the other flow rate of the charge oil and the furfural flow rates in accordance with signals API, FL, KV_{150}, KV_{210}, S, RI, CHG, T and SOLV.

4,162,198

SEPARATION OF A MIXTURE OF C_4-HYDROCARBONS BY EXTRACTIVE DISTILLATION

Dieter Stockburger, Gruenstadt; Klaus Volkamer, Frankenthal; Detlef Bender, Wachenheim; Klaus-Juergen Schneider, Neustadt; Harald Schwentker, Weisenheim; Ulrich Wagner, Limburgerhof, and Hans-Martin Weitz, Bad Durkheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 17, 1978, Ser. No. 906,469

Claims priority, application Fed. Rep. of Germany, May 28, 1977, 2724365

Int. Cl.[2] B01D *3/40, 3/06;* C07C *7/08*

U.S. Cl. 203—23 6 Claims

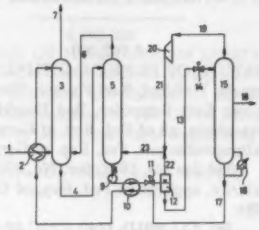
1. A process for separating, by means of a selective solvent, a mixture of C_4-hydrocarbons which contains some hydrocarbons which are more soluble in the selective solvent and some which are less soluble therein and recovering the selective solvent in a solvent recovery zone, which process comprises:

a. separating the hydrocarbon mixture, in an extractive distillation zone, into a top product which contains the less soluble hydrocarbons and an extract bottoms stream which contains the more soluble hydrocarbons and the selective solvent,

b. passing the extract bottoms stream taken off the extractive distillation zone to a higher pressure than the pressure in the extractive distillation zone,

c. heating the extract bottoms stream which is under this higher pressure in a heat exchange zone, by indirect heat exchange with the selective solvent obtained as the bottom product from the solvent recovery zone,

d. subjecting the heated extract bottoms stream to a flash evaporation and letting down the pressure of the heated extract bottoms stream, in a flash evaporation, to a pressure which is at least equal to the pressure in the extractive distillation zone and is higher than the pressure in the solvent recovery zone,



e. recycling the vapor component of the extract bottoms stream obtained from the flash evaporation to the extractive distillation zone while a liquid phase bottoms stream remaining after the flash evaporation is fed to the solvent recovery zone,

f. separating the liquid phase bottoms stream obtained from the flash evaporation in the solvent recovery zone into a product containing the hydrocarbons and, as the bottom product, the selective solvent which has been freed from the hydrocarbons,

g. recycling the resulting selective solvent via the heat exchange zone to the extractive distillation zone, and

h. recycling at least a portion of the product the product which is obtained from the solvent recovery zone and contains the hydrocarbons to the extractive distillation zone, after increasing the pressure in a compression zone.

4,162,199

REMOVING ORGANIC COMPONENTS FROM AN AQUEOUS CLEANING SOLUTION

Joseph J. English, Sycamore, Ill., assignor to Earl J. Kuntz, Chicago, Ill., a part interest

Filed May 18, 1976, Ser. No. 687,520

Int. Cl.[2] B01D *11/04, 3/00*

U.S. Cl. 203—39 8 Claims

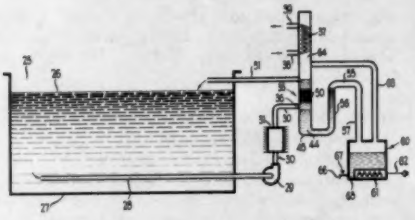
1. A method for removing organic components from a cleaning solution in a container comprising:

(A) at least intermittenly removing portions of said solution from said container;

(B) establishing intimate contact between said portions and an amount of solvent substantially immiscible with and of a different specific gravity than said solution, said solvent having a greater solubility for said organic components than the solubility said cleaning solution has for said organic components;

(C) returning, after said intimate contact, said portions to said container;

(D) separating, after said intimate contact, organic components from said amount of solvent; and



(E) after said separating of organic components from said amount of solvent, establishing contact between said amount of solvent and a portion of said cleaning solution.

4,162,200

PREPARATION OF PURE DIMETHYL CARBONATE

Walter Himmele, Walldorf; Karl Fischer, Worms; Gerd Kaibel, Lampertheim; Kurt Schneider, Bad Duerkheim, and Rudolf Irnich, Bobenheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 23, 1978, Ser. No. 871,547

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1977, 2706684

Int. Cl.[2] B01D *3/40;* C07C *69/00*

U.S. Cl. 203—58 5 Claims

1. A process for obtaining pure dimethyl carbonate from its solution in methanol, which comprises subjecting the solution to extractive distillation in a column over a temperature range of from at least 60° C. at the column top to not more than 250° C. at the column bottom, employing, as the extractant, an aprotic organic liquid which is substantially inert toward dimethyl carbonate, has an atmospheric boiling point above 100° C., is miscible with dimethyl carbonate in all proportions and has a dielectric constant ϵ of from 4 to 90 and a dipole moment μ of from 1.5 to 5 Debye.

4,162,201

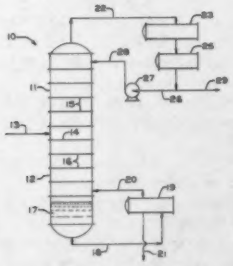
PURIFICATION AND RECOVERY OF ETHYLENE DICHLORIDE

Aurelio M. Crico, Corpus Christi, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jul. 12, 1978, Ser. No. 923,856

Int. Cl.[2] B01D *3/36;* C07C *19/02*

U.S. Cl. 203—67 3 Claims



1. In a process for purifying liquid ethylene dichloride by distillation wherein the impurities comprising carbon tetrachloride and chloroform are separated from the ethylene dichloride as a light fraction, the improvement comprising refluxing the light fraction until the chloroform concentration in the reflux exceeds 51.5 mole percent, thereafter maintaining the chloroform concentration in the reflux at greater than 51.5 mole percent and recovering ethylene dichloride that is substantially free of chloroform and carbon tetrachloride.

4,162,202

MEANS FOR IMPROVING CONTACT BETWEEN LI AND THE ANODE CURRENT COLLECTOR

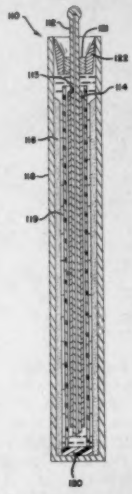
Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co. Inc., Indianapolis, Ind.

Division of Ser. No. 664,782, Mar. 8, 1976, Pat. No. 4,080,489.

This application Jan. 5, 1978, Ser. No. 867,068

Int. Cl.[2] C25D *5/48, 7/06*

U.S. Cl. 204—2.1 8 Claims



1. A method for adhering a alkali metal to a metallic surface substantially inert to said alkali metal comprising the steps of coating said metallic surface with a layer of a metal which is capable of spontaneously alloying with said alkali metal at ambient temperatures; and applying said solid alkali metal on said coated metallic surface with sufficient pressure to enable said plated metal to alloy with said solid alkali metal.

4,162,203

METHOD OF MAKING A NARROW-BAND INVERTED HOMO-HETEROJUNCTION AVALANCHE PHOTODIODE

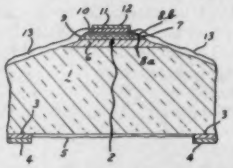
Richard C. Eden, Thousand Oaks, and Kenichi Nakano, N. Hollywood, both of Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Division of Ser. No. 808,496, Jun. 21, 1977, Pat. No. 4,110,778.

This application Jun. 28, 1978, Ser. No. 920,741

Int. Cl.[2] H01L *31/18*

U.S. Cl. 204—38 R 2 Claims



1. A method of fabricating an inverted avalanche photodi-

ode upon a selectively transparent, doped semiconductor substrate of a first conductivity type comprising the steps of:

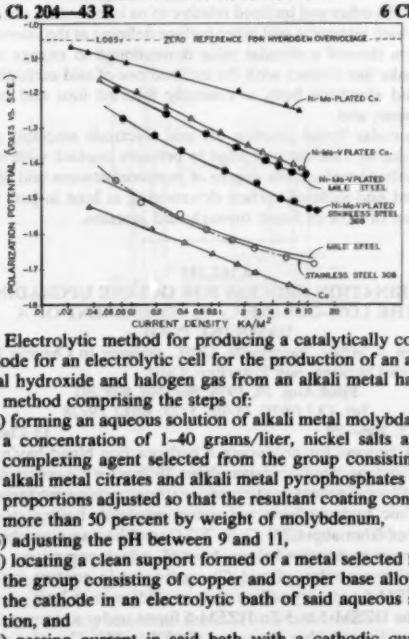
a. growing a buffer layer of selectively transparent, doped semiconductor material, having a lattice structure matching said substrate and being of said first conductivity type;
b. growing an active layer of selectively absorbent, doped semiconductor material having a lattice structure matching the buffer layer upon the buffer layer, where the grown material is of the same conductivity type as the buffer layer;
c. adding opposite conductivity type dopant during the growth of the active layer in sufficient quantities to reverse the conductivity type of any subsequent growth, at a time when the active layer growth is only a few microns in thickness;
d. growing a contact layer of doped semiconductor material having a lattice structure matching the active layer upon the active layer, with the conductivity type matching that of the immediately preceeding growth, to form a wafer consisting of a substrate with multiple layers deposited thereupon;
e. forming an electrical contact upon the contact layer;
f. masking and etching the side of the wafer upon which the layers are grown to form a mesa;
g. forming an electrical contact upon the substrate side of the wafer;
h. depositing passivation material, of a type which induces opposite conductivity type surface channels on the active layer grown in step b, upon all mesa surfaces etched during step e; and
i. depositing an anti-reflective coating material upon the substrate side of the wafer in the area where incoming light energy enters the substrate.

4,162,204

PLATED METALLIC CATHODE

Han C. Kuo, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Filed Apr. 3, 1978, Ser. No. 892,554
Int. Cl.[2] C25D *3/56, 3/02, 17/10*
U.S. Cl. 204—43 R **6 Claims**



1. Electrolytic method for producing a catalytically coated cathode for an electrolytic cell for the production of an alkali metal hydroxide and halogen gas from an alkali metal halide, said method comprising the steps of:

(a) forming an aqueous solution of alkali metal molybdate at a concentration of 1–40 grams/liter, nickel salts and a complexing agent selected from the group consisting of alkali metal citrates and alkali metal pyrophosphates with proportions adjusted so that the resultant coating contains more than 50 percent by weight of molybdenum,
(b) adjusting the pH between 9 and 11,
(c) locating a clean support formed of a metal selected from the group consisting of copper and copper base alloys at the cathode in an electrolytic bath of said aqueous solution, and
(d) passing current in said bath with a cathodic current density of 0.4 A/dm^2 to 50 A/dm^2 for a duration sufficient to make said resultant coating from about 1 μm to about 5 μm thick.

4,162,205

METHOD OF ELECTROPLATING TIN AND ALKALINE ELECTROPLATING BATH THEREFOR

Harold P. Wilson, Huron, Ohio, and Walter C. Bradbury, Townsend, Ga., assignors to Vulcan Materials Company, Birmingham, Ala.

Filed Oct. 19, 1978, Ser. No. 952,855
Int. Cl.[2] C25D *3/60*
U.S. Cl. 204—43 S **22 Claims**

12. An aqueous solution for plating a tin-containing alloy on a conductive substrate which solution comprises tin ions, alkali metal hydroxide, and a compound selected from the group consisting of at least one alkali metal bismuth salt of a linear polyhydroxymonocarboxylic acid having at least six carbon atoms, at least one alkali metal bismuthyl compound of glucono-delta-lactone, and mixtures thereof.

4,162,206

SEPARATION OF IODINE FROM MERCURY CONTAINING SCRUBBING SOLUTIONS

Leland L. Burger, Richland, and Randall D. Scheele, Kennewick, both of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 16, 1978, Ser. No. 961,174
Int. Cl.[2] C25B *1/24*
U.S. Cl. 204—94 **5 Claims**

1. A process for recovering iodine from a nitric acid scrub solution containing mercuric nitrate and iodine comprising:

adjusting the nitric acid concentration from about 1 to 16.0 M to prepare a feed solution;
passing a current through the feed solution at a current density of from about 0.1 to 1.0 amps/cm^2 to react the iodine with the mercuric nitrate and form mercuric iodate which precipitates out; and
recovering the precipitated mercuric iodate.

4,162,207

PROCESS FOR THE CONVERSION OF SULFUR DIOXIDE

Stephen K. Boyer, 339 Wayne Ave., Springfield, Pa. 19064, and Steven M. Slater, 1 Garden Ct., Cambridge, Mass. 02138

Filed Sep. 5, 1978, Ser. No. 939,220
Int. Cl.[2] B01J *1/10*
U.S. Cl. 204—157.1 R **12 Claims**

1. A process for converting sulfur dioxide to sulfur trioxide, comprising exposing an oxygen-photosensitizing substance to activating radiation in an aqueous medium in the presence of oxygen and sulfur dioxide.

4,162,208

QUANTITATIVE PROTEIN ANALYSIS BY IMMUNODIFFUSION

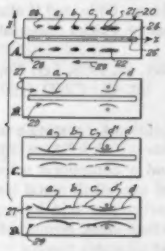
Frederick J. Aladjem, and Padmasini K. Ayenger, both of 845 Las Palmas Rd., Pasadena, Calif. 91102

Division of Ser. No. 546,351, Feb. 3, 1975, Pat. No. 4,097,149.
This application Apr. 3, 1978, Ser. No. 892,953
Int. Cl.[2] G01N *27/26, 33/16, 21/20*
U.S. Cl. 204—180 G **22 Claims**

1. Method of obtaining a quantitative measure of the concentration of a protein in an antigen sample which has been subjected to immunoelectrophoresis with an antibody source containing an antibody specific to said protein to produce at least one precipitation zone, said method comprising

optically imaging said zone on the image surface of a video camera tube,
developing electrical position signals which represent two-dimensional position coordinates at a plurality of surface

positions corresponding to selected positions of the zone image,

deriving electronically from said position signals an electrical parameter signal representing a zone parameter which varies in characteristic manner with said protein concentration,

and comparing the parameter signal with a set of reference parameter signals derived correspondingly from reference zones produced by equivalent immunoelectrophoresis of a plurality of reference antigen solutions containing respective known concentrations of said protein to provide a quantitative measure of the concentration of said protein in said sample.

4,162,209

METHOD OF PRODUCING CHAFF

Denis V. Butler, Fareham, England, assignor to Plessey Handel und Investments AG, Zug, Switzerland

Filed Jan. 13, 1978, Ser. No. 869,153

Claims priority, application United Kingdom, Jan. 18, 1977, 1874/77

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 C **4 Claims**

1. A method of producing chaff for deflecting electromagnetic radiation, which method comprises the steps of winding a plurality of glass carrier filaments into groups, sputtering a coating of aluminum on to said plurality of carrier filaments in the presence of an electrostatic field of sufficient magnitude to confine said aluminum to the vicinity of said filaments, and cutting the coated filaments into small pieces.

4,162,210

METHOD FOR COVERING A FIRST LAYER OR LAYER SEQUENCE SITUATED ON A SUBSTRATE WITH AN ADDITIONAL SECOND LAYER BY A SPUTTERING-ON PROCESS

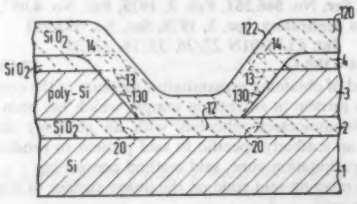
Hans-Raimund Deppe, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jan. 26, 1978, Ser. No. 872,433

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1977, 2705611

Int. Cl.² C23C *15/00*

U.S. Cl. 204—192 EC **11 Claims**



1. A method for covering a first layer means comprising an etched structure situated on a substrate and having under-etchings with a second layer by means of sputter depositing material from a high frequency sputtering source with a given target voltage, comprising the steps of: applying a grid potential to the substrate during said sputter depositing in order to fill the under-etchings, said grid potential amounting to between one-tenth and one-third of the target voltage applied to the sputtering source.

4,162,211

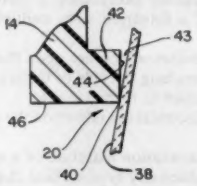
COMBINATION ELECTRODE ASSEMBLY

Paul Jerrold-Jones, Claremont, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 25, 1977, Ser. No. 772,370

Int. Cl.² G01N *27/36*

U.S. Cl. 204—195 G **6 Claims**



1. An electrochemical combination electrode assembly comprising:

an outer tubular container of nonconductive material having an inner annular surface adjacent an open end thereof;

an elongated electrode body of nonconductive material coaxial with said open end of said container and having an ion sensitive structure closing one end thereof and an annular exterior surface adjacent said ion sensitive structure;

one of said inner and exterior surfaces being inclined relative to the other and inclined relative to an intersecting surface which intersects said other surface defining at the intersection thereof a circular edge dimensioned to engage and make line contact with the inclined one of said surfaces as said electrode body is coaxially inserted into said container; and

an annular liquid junction for said electrode assembly defined by said circular edge in pressure contact with said inclined surface, the degree of pressure between said edge and said inclined surface determining at least in part the rate of flow of liquid through said junction.

4,162,212

COMBINATION PROCESS FOR OCTANE UPGRADING THE LOW-OCTANE C_5–C_6 COMPONENT OF A GASOLINE POOL

Stephen J. Miller, Emeryville, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 30, 1978, Ser. No. 938,291

Int. Cl.² C07C *15/02, 5/24;* B01J *29/28*

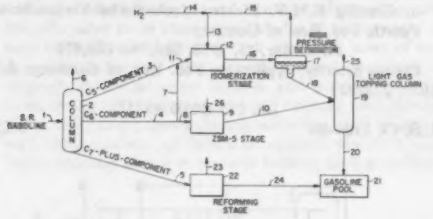
U.S. Cl. 208—79 **13 Claims**

1. A process for producing a hydrocarbon blend having a motor octane number above about 78 from a C_5-component and a C_6-component, said components comprising mixtures of paraffinic hydrocarbons and, when admixed, boiling in the range of from about 25° C. to 70° C. and having a combined motor octane number below about 65, which comprises:

passing a portion of said C_6-component in contact with a ZSM-5-type crystalline aluminosilicate in at least one of the HZSM-5 and Zn-HZSM-5 forms under a temperature condition within the range of 400° to 550° C. and a pressure condition within the range of from about 0.5 to 10

atmospheres to produce a resulting hydrocarbon mixture having a motor octane number above about 100, said zeolite having a silica-to-alumina mol ratio in the range of from about 40 to 160, and said portion, based upon the sum of the volumes of said components, being in the range of from about 10 to 40 percent thereof;

passing said C_5-component and any remainder of said C_6-component in contact with a hydrocarbon-isomerizing



catalyst under isomerizing conditions, including a temperature condition within the range of from about 0° C. to 400° C. and a pressure condition within the range of from about 0.5 to 100 atmospheres to produce a resultant hydrocarbon mixture having a motor octane number above about 70; and

combining at least a major portion of each of said resulting mixtures to produce said blend.

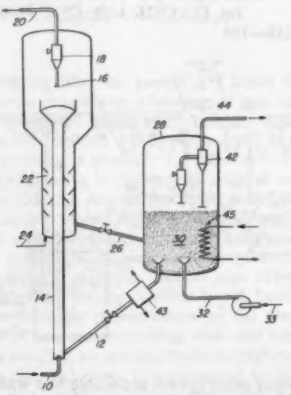
4,162,213
CATALYTIC CRACKING OF METAL-CONTAMINATED OILS

Fred S. Zrinscak, Sr., Woodbury Heights, and Grant G. Karsner, Westville, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 681,379, Apr. 29, 1976, abandoned. This application Aug. 7, 1978, Ser. No. 931,574

Int. Cl.[2] C10G *11/04;* B01J *8/24*

U.S. Cl. 208—89 **25 Claims**



1. A process for catalytically cracking a metal-contaminated residual feedstock containing about 0.50 to 15.0 Nickel Equivalents of metal, which comprises, in combination:

contacting said feedstock under cracking conditions in a cracking zone and in the absence of added hydrogen with fluidized, regenerated cracking catalyst characterized by a metals content of 700 to 5,000 Nickel Equivalent of metal and having less than about 0.10 wt. % residual carbon, whereby forming cracked products and deactivated, coked catalyst;

separating said deactivated, coked catalyst from said cracked products;

passing said separated, deactivated catalyst to a regeneration zone;

contacting said deactivated coked catalyst in said regeneration zone with an excess of oxygen containing gas at 1300 to 1400F. to form said regenerated cracking catalyst having less than about 0.10 wt. % residual carbon with production of a flue gas containing free oxygen;

and recycling said regenerated catalyst to said cracking zone, whereby selectively forming liquid cracked products.

4,162,214
METHOD OF PREPARING BENZENE AND XYLENES

Gdal N. Maslyansky, Moskovsk prospekt, 189, kv. 64; Georgy L. Rabinovich, ulitsa Antonova-Ovseenko, 19, korpus 2, kv. 104; Leonid M. Treiger, Moskovsky prospekt, 189, kv. 64; Boris K. Gokhman, ulitsa Voinova, 11, kv. 2, and Viktor D. Seleznev, prospekt Obukhovskoi oborony, 108, korpus 4, kv. 58, all of, Leningrad, U.S.S.R.

Filed Oct. 4, 1977, Ser. No. 839,347

Int. Cl.[2] C07C *3/58;* C10G *35/06*

U.S. Cl. 585—471 **14 Claims**

1. A method of preparing benzene and xylenes from catalysates of reforming of gasoline fractions comprising a mixture of aromatic C_6–C_{10} hydrocarbons and non-aromatic hydrocarbons comprising: separating a low-boiling fraction from said reforming catalysate by distillation at a temperature of from 90° to 108° C.; treating the remaining high-boiling fraction comprising toluene, C_8–C_{10} aromatic hydrocarbons and paraffin hydrocarbons, in the presence of a hydrogen-containing gas at a temperature within the range of from 450° to 600° C. under a pressure of from 10 to 60 atm in contact with a catalyst consisting of 1 to 85% by weight of H-mordenite, 0.1 to 10% by weight of a hydrogenating component selected from the group consisting of:

(a) oxides or sulfide of molybdenum;

(b) oxides or sulfides of molybdenum combined with nickel;

(c) oxides or sulfides of molybdenum combined with cobalt; and

(d) platinum;

the balance being constituted by a binder, to produce a liquid aromatic hydrocarbon product; subjecting said liquid aromatic hydrocarbon product to rectification to produce benzene, toluene, total xylenes and C_9–C_{10} aromatic hydrocarbons; separating p- and o-xylenes from the total xylenes; separating the benzene; recycling to the high-boiling fraction treatment a stream selected from the group consisting of toluene, toluene + aromatic C_9–C_{10} hydrocarbons, and toluene + aromatic C_9–C_{10} hydrocarbons + m-xylene.

4,162,215
DISPLACEMENT OF A LIQUID A BY A LIQUID B IN A SUSPENSION

Günther Klotz, Berg.-Gladbach, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 26, 1977, Ser. No. 800,813

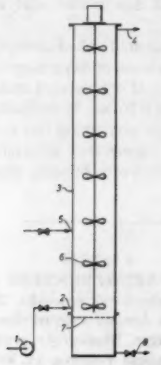
Claims priority, application Fed. Rep. of Germany, Jun. 18, 1976, 2627333

Int. Cl.[2] B01D *11/00;* D21C *9/02;* B06B *3/02, 5/14*

U.S. Cl. 210—21 **8 Claims**

1. A process for the displacement by a liquid B of a liquid A in a suspension having a solids content of from 0.5 to 20% which ascends a suspension column while being stirred, comprising feeding the liquid B into the column, at a point above the inlet for the suspension, but in the lower half of the column, discharging the displaced liquid A from the column from an

outlet below the inlet for the suspension, discharging the suspension including liquid B from the column from an outlet

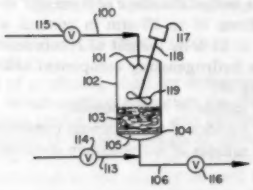


adjacent the top of the column and providing a screen between the inlet for the suspension and the outlet for liquid A.

4,162,216
PROCESS FOR REMOVAL OF SUSPENDED SOLIDS FROM LIQUID

Evan K. Nyer, Monroe, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Filed Oct. 25, 1977, Ser. No. 845,300
Int. Cl.[2] B01D *23/24*
U.S. Cl. 210—73 R **17 Claims**

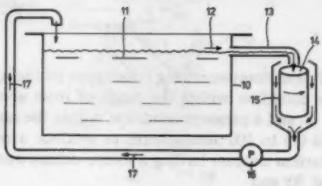


1. In a process for removal of solids from a liquid containing suspended solids including the steps of:
(a) providing a filtration vessel containing a filter bed of discontinuous polyurethane particles;
(b) flowing said liquid containing suspended solids through said filter bed in said filtration vessel for deposition of said solids on said polyurethane particles to form solids-depleted liquid, and discharging solids-depleted liquid from said filtration vessel, until said filter bed is at least partially loaded with deposited solids;
(c) terminating the flow of liquid through said filter bed; and
(d) removing deposited solids from the discontinuous polyurethane particles in said filter bed, thereby renewing said filter bed for solids removal from said liquid containing suspended solids,
the improvement wherein the removal of deposited solids from the discontinuous polyurethane particles of said filter bed comprises the steps of:
adding at least one bed volume of a regeneration liquid to said filtration vessel,
mechanically mixing said filter bed of discontinuous polyurethane particles having said solids deposited thereon in a total volume of liquid in said filtration vessel comprising said regeneration liquid and the hold-up liquid in said filter bed resulting from said termination of liquid flow therethrough, without removal of liquid from said filtration vessel during said mixing therein, to cause deposited solids to disengage from said discontinuous polyurethane particles and pass into said total liquid volume, thereby forming solids-enriched liquid, and
discharging said solids-enriched liquid from said filtration vessel.

4,162,217
METHOD FOR SEPARATING IMPURITIES FROM A CHEMICAL METALLIZING BATH

Günther Herrmann, Nurnberg, Fed. Rep. of Germany, assignor to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt, Fuerth, Fed. Rep. of Germany

Filed Mar. 15, 1978, Ser. No. 886,671
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732927
Int. Cl.[2] B01D *45/12*
U.S. Cl. 210—84 **3 Claims**

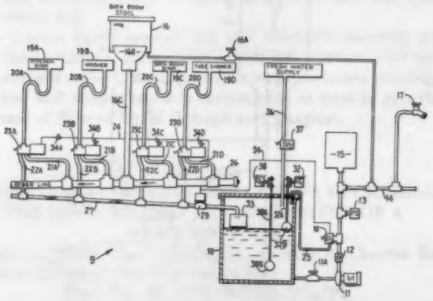


1. A method for separating impurities from a metallizing bath, in the absence of electrical current in the bath including the steps of feeding the bath solution to a centrifuge, removing the impurities by precipitating onto the drum wall by centrifugal force, and subsequently removing the metallic impurities from the centrifuge wall by activation of the centrifuge wall as in anode.

4,162,218
WATER REUSE SYSTEM

Gerald L. McCormick, Rte. 7, Allegan, Mich. 49010

Filed Jun. 27, 1977, Ser. No. 810,039
Int. Cl.[2] C02B *3/08*; C02C *1/40*
U.S. Cl. 210—104 **12 Claims**



1. A water reuse system applicable to a water use system of the type in which water drained from a point of use is normally discarded through a sewer line or the like to which the point of use drain connects, said water reuse system being arranged for supplying water drained from such point of use to a point of reuse, such water reuse system comprising in combination:
a holding tank for storing used water;
means responsive to a demand for water at said point of reuse for transferring water from said holding tank to said point of reuse;
means including a drain conduit for channeling water from said point of use drain alternatively to said drain conduit

and to said sewer line, said drain conduit having an outlet connected with said holding tank and an inlet to which said point of use drain is additionally connectible;

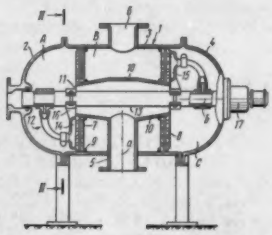
valve means interposed in said drain conduit between point of use drain and holding tank, and being responsive to an excessive water level in said holding tank for blocking entry into said holding tank of water draining from said point of use, said valve means comprising a fail-safe valve of remote actuated type interposed in said drain conduit downstream of the point of use drains served by said holding tank, biasing means continuously urging said fail-safe valve to its closed position for blocking entry of used water into said holding tank from said point of use, externally powered valve operator means energized in response to a low water level in said holding tank for overcoming said biasing means and opening said fail-safe valve, said biasing means closing said valve upon failure of said valve operator or failure of external power to said valve operator means to prevent holding tank overflow.

4,162,219

SELF-CLEANING FILTER

Mark U. Miropolsky; David L. Maizlik; Anatoly A. Dobrovolsky; Igor K. Gerasimovich; Ariel S. Levinson; Iosif P. Naidich, all of Moscow; Georgy A. Menkh, Kemerovo, and Alexandr A. Yasminov, Moscow, all of U.S.S.R., assignors to Proizvodstvennoe obiedinenie "Tekhenergokhimprom", U.S.S.R.

Filed Jan. 12, 1978, Ser. No. 869,012
Claims priority, application U.S.S.R., Jan. 28, 1977, 2447783
Int. Cl.[2] B01D *35/16*
U.S. Cl. 210—108 **1 Claim**



1. A self-cleaning filter for purifying a liquid of particles suspended therein, comprising: a housing; at least one filtering partition accommodated within said housing; a chamber for a liquid to be purified defined within said housing to one side of said filtering partition; a chamber for the clarified liquid defined within said housing to the opposite side of said filtering partition; a pipe for the inlet of the liquid to be purified into said chamber for the liquid to be purified, arranged on said housing within said chamber for the clarified liquid and having its geometric axis extending substantially parallel with the plane of said filtering partition; another pipe extending centrally of said chamber for the clarified liquid, having its geometric axis substantially perpendicular to the plane of said filtering partition and communicating with said inlet pipe for the liquid to be purified; an opening made through said filtering partition, of a size and shape corresponding to the size and shape of the cross-section of said another pipe; said another pipe being connected to the edges of said opening to supply the liquid to be purified into said chamber for the liquid to be purified; the arrangement of said pipes, effecting the supply of said liquid to be purified, within said chamber for clarified liquid providing for uniform distribution of the liquid to be purified across the section of the filter and facilitating the dismantling of the filter for replacement of said filtering partition during the service life of the filter; an outlet pipe for the clarified liquid arranged on said housing within said chamber for the clarified liquid; means for flushing said filtering partition with a current of the liquid, flowing in a reverse direction upon the pressure drop between said chambers for the liquid to be purified and the clarified liquid attaining a predetermined value, said flushing means including a hollow shaft rotatably mounted in said housing and disposed substantially coaxially within said another pipe, means coupled to said hollow shaft for rotation therewith engaging said filtering partition on the side thereof defining said chamber for the liquid to be purified for receiving the current of reverse flowing liquid and means fluidly communicating said engaging means for directing the reverse flowing liquid to the interior of said hollow shaft.

4,162,220

BLOOD FILTER

Francis M. Servas, Belle Mead, N.J., assignor to Johnson & Johnson, New Brunswick, N.J. and Purolator, Del.

Continuation-in-part of Ser. No. 756,220, Jan. 3, 1977, Pat. No. 4,096,070. This application Apr. 3, 1978, Ser. No. 892,629
The portion of the term of this patent subsequent to Jun. 20, 1995, has been disclaimed.
Int. Cl.[2] B01D *29/06*
U.S. Cl. 210—448 **2 Claims**

1. In a blood filter of the type having an inlet spike for insertion into an outlet of a blood bag, said spike being made from a plastic material selected from the group consisting of polyolefins, polycarbonates, polystyrene, polyacrylics, polyesters, polyacylonitrile, nylon, polyphenylene oxides, polysulfones, polyvinylchloride and their copolymers, the improvement comprising the outer surface of said spike, that is the surface which is to contact the bag opening during insertion of the filter, having a uniformly roughened finish of from 50 to 200 microinches, whereby the spike may be easily inserted and removed from the outlet of each of a series of blood bags without the use of a lubricant.

4,162,221

SYNTHETIC MUSK-BASED COMPOSITION, ITS PRODUCTION AND APPLICATIONS

Louis Dürr, Paris, and Francis Legrand, Mulhouse, both of France, assignors to Societe des Produits Chimiques et Matieres Colorantes de Mulhouse, Paris, France

Filed Jan. 27, 1978, Ser. No. 872,756
Claims priority, application France, Jan. 31, 1977, 77 02663
Int. Cl.[2] C11B *9/00*; C11D *3/50*
U.S. Cl. 252—1 **28 Claims**

1. In a composition comprising nitrated synthetic musk, the improvement wherein the composition concurrently comprises from 0.5 to 50 percent by weight of a modifying agent; the percentage by weight being based on the total weight of

the nitrated synthetic musk and the modifying agent, and said modifying agent being a solid non-filmformer which is at least partially soluble in a lower alcohol, is odorless and is neither toxic nor an irritant to human tissue which it contacts.

8. A composition according to claim 1 wherein the modifying agent is a sugar, an ether of a sugar or an ester of a sugar.

24. A commercial product containing a fragrance principle and comprising, as a fixing agent for the fragrance principle, a composition according to claim 1.

4,162,222
GREASE COMPOSITIONS

James P. King, Upper Gwynedd Township, Montgomery County, Pa., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 15, 1978, Ser. No. 933,935
Int. Cl.[2] C10M 1/48, 3/42, 1/44, 3/38
U.S. Cl. 252—32.7 E 6 Claims

1. A grease composition comprising a silicone fluid and a thickening amount of a poly(metal phosphinate) selected from the group of polymers having the following formulas:

$$M[XP(R_a')(R_b'')X]_c[XP(R)(H)X]_d \text{ and} \quad (1)$$

$$M_4'O_4(OH)_x[XP(R)(H)X]_{8-x}, \quad (2)$$

wherein M is trivalent chromium or iron, M' is tetravalent titanium, zirconium or hafnium, X is oxygen or sulfur, R is alkyl or aryl, R' is alkyl, R'' is aryl, a and b are each zero, 1 to 2 and the sum of a and b is 2, c is zero, 1 or 2, d is equal to 3-c, and x ranges from zero to 7.9.

4,162,223
RESIDUE OF HYDROGENATION PRODUCT OF BRANCHED ALIPHATIC DINITRILES AS LUBRICANT ADDITIVE

James T. Gragson, and Ralph P. Williams, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 21, 1978, Ser. No. 888,814
Int. Cl.[2] C10M 1/40, 3/34, 5/22, 7/38
U.S. Cl. 252—33.2 17 Claims

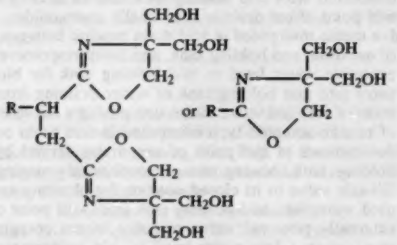
1. A lubricating composition containing a heavy reaction product obtained from the hydrogenation of branched aliphatic dinitriles containing from 7 to 30 carbon atoms per molecule said product essentially containing a mixture of aliphatic diamines and polyamines.

4,162,224
SOLUBILIZED BORATES OF BIS-OXAZOLINE AND LUBRICANT COMPOSITIONS CONTAINING THE SAME

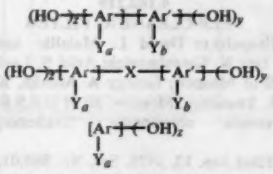
Robert F. Bridger, Hopewell, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 28, 1977, Ser. No. 763,736
Int. Cl.[2] C10M 1/10, 1/54, 5/28
U.S. Cl. 252—49.6 14 Claims

1. A lubricant composition comprising a major proportion of a base oil of lubricating viscosity or greases thereof containing a minor amount, sufficient to improve the antioxidant or antiwear properties thereof, of the product obtained by reaction at a temperature between about 60 ° and about 180° C. of (A) a bis-oxazoline or oxazoline reactant characterized by the general formula:



where R is a straight chain, branched chain or cycloalkyl group containing from 4 to 30 carbon atoms, (B) boric acid and (C) a substituted phenol selected from those having the general structures:



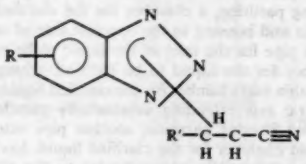
wherein X is an alkylene group having from 1 to 5 carbon atoms; oxygen or sulfur; y and z are either 1 or 2; Ar and Ar' are phenyl, naphthyl or anthracenyl and Y_a and Y_b are substituents selected from alkyl, aryl or non-hydrocarbyl substituents; the molar ratio of A:B:C being between about 1:1:1 and about 1:3:5.

4,162,225
LUBRICANT COMPOSITIONS OF ENHANCED ANTIOXIDANT PROPERTIES

Milton Braid, Westmont, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 17, 1978, Ser. No. 897,078
Int. Cl.[2] C10M 1/32
U.S. Cl. 252—50 6 Claims

1. A lubricant composition which comprises an oleaginous material and, in an amount effective to impart oxidation properties thereto, an adduct having the formula:



where R is selected from the group consisting of hydrogen and hydrocarbyl containing from 1 to about 12 carbon atoms, and R' is selected from the group consisting of hydrogen and alkyl containing from 1 to about 8 carbon atoms.

4,162,226
ELECTROSTATIC TONER WITH AN ANTIPLASTICIZER

Arun K. Chatterji, 100 Kittelberger Park, Webster, N.Y. 14580

Division of Ser. No. 259,953, Jun. 5, 1972, Pat. No. 3,792,964.
This application Feb. 19, 1974, Ser. No. 443,689
Int. Cl.[2] G03G 9/08
U.S. Cl. 252—62.1 P 4 Claims

1. A low melt toner comprising a colorant and a polyblend of an imaging polymer and an antiplasticizer, with the absolute

difference in the solubility parameter of the antiplasticizer with respect to the imaging polymer being more than about ±0.95 (cal/c.c.)$^{\frac{1}{2}}$ where said solubility parameter is defined by

$$\Delta H = \left[\left(\frac{E_1}{V_1}\right)^{\frac{1}{2}} - \left(\frac{E_2}{V_2}\right)^{\frac{1}{2}}\right]^2 a_1 a_2$$

$$= [S_1 - S_2]^2 a_1 a_2$$

where ΔH = heat of mixing per c.c. of mixture
$S = (E/V)^{\frac{1}{2}}$ = solubility parameter, (cal/c.c.)$^{\frac{1}{2}}$

$$= \frac{\Sigma_i F_i}{V}$$

F_i = Molar attraction constant of group i
Σ_i = summation i over all groups

$\frac{E}{V}$ = cohesive energy density, cal/c.c.

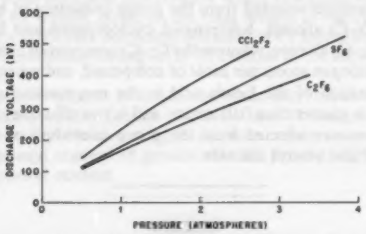
E = molar cohesive energy
V = molar volume of each component
a = volume fraction of each component

4,162,227

DIELECTRIC GAS MIXTURES CONTAINING SULFUR HEXAFLUORIDE

Chathan M. Cooke, Cambridge, Mass., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 24, 1976, Ser. No. 660,887
Int. Cl.[2] H01B 3/56
U.S. Cl. 252—63.5 **1 Claim**



1. An electrically insulating gaseous mixture consisting of sulfur hexafluoride and hexafluoroethane, said gases being present in such proportions that the sum of their electrical discharge voltages at their respective partial pressures in said mixture exceeds the electrical discharge voltage of each at the same temperature and pressure as that of said mixture.

4,162,228

PROCESS FOR PREPARING COLORED DETERGENT FLAKES

Enrique C. Robles, Madrid, Spain, assignor to Lever Brothers Company, New York, N.Y.

Filed May 30, 1978, Ser. No. 910,818
Claims priority, application United Kingdom, May 31, 1977, 22948/77
Int. Cl.[2] C11D 1/66, 3/40, 11/00, 17/06
U.S. Cl. 252—90 **4 Claims**

1. A process for preparing coloured detergent particles, in which nonionic detergent flakes with a softening point of between 30° and 70° C. are admixed with a dry, powdered colouring agent, having a particle size of 1–10 micron, said colouring agent being used in an amount of 0.01–5% by weight of the total of nonionic detergent flakes and colouring agent.

4. A process according to claim 1, in which the coloured nonionic detergent flakes are added in an amount of 0.1–10% by weight to a particulate detergent base powder to produce a speckled detergent composition.

4,162,229

DECONTAMINATION PROCESS

Hana Loewenschuss, Stilli, Switzerland, assignor to Gesellschaft zur Förderung der Forschung an der Eidgenössischen Technischen Hochschule, Zurich, Switzerland

Filed Apr. 7, 1977, Ser. No. 785,765
Claims priority, application Switzerland, Apr. 7, 1976, 4335/76
Int. Cl.[2] G21F 9/28
U.S. Cl. 252—301.1 W **19 Claims**

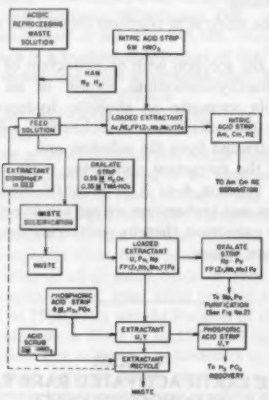
1. A process for decontaminating metal surfaces of coolant circuits of nuclear reactors and associated equipment with surfaces are contaminated with radioactive contaminants, which comprises the steps of: contacting the contaminated metal surface with an aqueous solution consisting essentially of a 0.001 to 1.0 molar solution of at least one water-soluble cerium(IV) salt in water, at a temperature in the range of from the freezing point to the boiling point of the solution, and thereby dissolving the contaminants in said solution; then removing said solution from contact with said surface and then washing said surface with water to remove residues of said solution therefrom.

4,162,230

METHOD FOR THE RECOVERY OF ACTINIDE ELEMENTS FROM NUCLEAR REACTOR WASTE

E. Philip Horwitz, Elmhurst; Walter H. Delphin, Woodridge, and George W. Mason, Clarendon Hills, all of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1977, Ser. No. 865,346
Int. Cl.[2] G21F 9/04, 9/06
U.S. Cl. 252—301.1 W **7 Claims**



1. A process for separating and recovering actinide values from acidic nuclear fuel reprocessing waste solutions containing actinide values, lanthanide values, fission product values and other metal values comprising:

a. adding hydrazine and hydroxylammonium nitrate in equimolar amounts to the waste solution to adjust the oxidation state of neptunium and plutonium in the waste solution to +4, thereby forming a feed solution;

b. contacting the feed solution with an organic extractant of 0.1 to 1.5 M di-hexoxyethyl phosphoric acid in a water-immiscible aromatic or aliphatic hydrocarbon diluent whereby the actinide values, the rare earths, some fission

product values and iron are selectively extracted from the feed solution thereby loading the extractant;

c. contacting the loaded extractant with a first aqueous strip selected from the group consisting of a nitric acid solution and an oxalate solution, the oxalate solution selected from the group consisting of oxalic acid and tetramethylammonium hydrogen oxalate, and trimethylammonium hydrogen oxalate, the nitric acid solution selectively stripping americium, curium and rare earth values and the oxalate solution selectively stripping neptunium, plutonium, fission product zirconium, niobium and molybdenum and iron values, the uranium values remaining in the extractant, whereby some of the actinide values and some of the other values are stripped from the extractant, forming a partially loaded extractant; and

d. contacting the partially loaded extractant with the other of the strip solutions of step (c), whereby the remaining actinide values and some of the other values are stripped from the extractant, thereby recovering the actinide values from the waste solution.

4,162,231

METHOD FOR RECOVERING PALLADIUM AND TECHNETIUM VALUES FROM NUCLEAR FUEL REPROCESSING WASTE SOLUTIONS

E. Philip Horwitz, Elmhurst, and Walter H. Delphin, Woodridge, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Dec. 28, 1977, Ser. No. 865,347
Int. Cl.[2] G21F 9/04, 9/06
U.S. Cl. 252—301.1 W **3 Claims**

1. A method for recovering palladium and technetium values from a nitric acid nuclear fuel reprocessing waste solution containing these and actinide, rare earth and fission product values comprising:

adjusting the nitric acid concentration of the solution to 0.5 to 3.0 M;

contacting the solution with an extractant of 0.05 to 0.5 M tricaprylmethylammonium nitrate in an inert water-immiscible aromatic or aliphatic hydrocarbon diluent whereby the palladium and technetium values are selectively extracted from the solution; and

contacting the extractant containing these values with an aqueous solution 4 to 8 M in nitric acid whereby the palladium and technetium values are selectively stripped from the extractant, thereby recovering the palladium and technetium values.

4,162,232

RARE EARTH ACTIVATED RARE EARTH FLUOROGERMANATE

Ramon L. Yale, Ulster, Pa., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Continuation-in-part of Ser. No. 891,072, Mar. 29, 1978, abandoned. This application Aug. 9, 1978, Ser. No. 932,096
Int. Cl.[2] C09K 11/46
U.S. Cl. 252—301.4 F **10 Claims**

1. A luminescent composition consisting essentially of a rare earth activated rare earth fluorogermanate represented by the formula: $[R_{1x}R_{2(1-x)}]_a F_b Ge O_c$ wherein R_1 is selected from Y, La and Gd, R_2 is selected from Eu, Gd, Tb and Pr and R_1 and R_2 are different rare earth elements, x is from about 0.9 to about 0.9998, a is from about 2 to 4, b is from about 0.85 to about 3.15 and c is from about 4 to about 7.5.

4,162,233

ISOMERIZATION-ALKYLATION SYSTEMS COMPRISING A GR. III A LEWIS ACID AND A NON-REACTIVE APROTIC SOLVENT

George M. Kramer, Berkeley Heights, N.J., assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Mar. 22, 1978, Ser. No. 889,033
Int. Cl.[2] B01J 31/02, 27/10; C07C 3/18, 5/24
U.S. Cl. 252—429 R **19 Claims**

1. A stable acid system comprising a Lewis acid being characterized as having a "Selectivity Parameter" $(I/E)_{MCP}$ greater than about 0.5 and being represented by the formula MXn wherein M, is a Group IIIA element of the Periodic Table, X is a halogen and n is the ratio of halogen atoms to atoms of M dissolved in a non-reactive aprotic solvent selected from the group consisting of methylene chloride, methylene bromide, 1,2-dichloroethane, 1,1-dibromocyclopropane, 1,1-dichlorocyclopropane, cis or trans-1,2-dichlorocyclopropane and cis or trans-1,2-dibromocycloproane, and wherein the concentration of said Lewis acid in the non-reactive aprotic solvent is greater than about 0.01 molar.

12. A stable catalyst composition comprising an admixture of a Lewis acid selected from the group consisting of $AlBr_3$, $GaBr_3$ and $GaCl_3$, a non-reactive aprotic solvent selected from the group consisting of methylene bromide and methylene chloride and a promoter selected from the group consisting of t-butyl bromide and t-butyl chloride, wherein the concentration of the Lewis acid in the non-reactive aprotic solvent ranges from about 0.5 to about 3 molar.

13. A stable catalyst composition comprising an admixture of (a) a Lewis acid being characterized as having a "Selectivity Parameter" $(I/E)_{MCP}$ greater than about 0.5 and being represented by the formula MXn, wherein M is a Group IIIA element of the Periodic Table, X is a halogen and n is the ratio of halogen atoms to atoms of M dissolved in (b) a non-reactive aprotic solvent selected from the group consisting of halogenated C_1–C_3 alkanes, halogenated cyclopropane and halogenated C_2–C_3 alkenes, wherein the C_2–C_3 compounds contain at least 2 halogen atoms per mole of compound, and wherein the concentration of the Lewis acid in the non-reactive aprotic solvent is greater than 0.01 molar, and (c) an effective amount of a promoter selected from the group consisting of t-butyl bromide and t-butyl chloride.

4,162,234

OXIDATION CATALYSTS

Robert K. Grasselli, Chagrin Falls; Dev D. Suresh, Macedonia, and Harley F. Hardman, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 490,532, Jul. 22, 1974, abandoned. This application Jul. 1, 1977, Ser. No. 812,072
Int. Cl.[2] B01J 21/02, 27/14, 27/02, 23/10
U.S. Cl. 252—432 **21 Claims**

1. Catalysts of the formula:

$$X_a A_b D_c E_d Fe_f Bi_g Mo_{12} O_x$$

wherein X is Y, Zr, S, Th or mixture thereof;

A is an alkali metal, thallium or mixture thereof;

D is nickel, cobalt, calcium, strontium, cadmium, or mixture thereof;

E is phosphorus, arsenic, boron, antimony or mixture thereof; and

wherein

a is greater than 0 and less than 5;

b and d are 0–4;

c is 0.1 to 20;

f and g are 0.1–10; and

x is the number of oxygens required to satisfy the valence requirements of the other elements present, said catalyst being free of chromium.

4,162,235

CATALYSTS

Gary J. K. Acres; Barry J. Cooper, and Brian Harrison, all of London, England, assignors to Johnson, Matthey & Co., Limited, London, England

Filed Mar. 14, 1977, Ser. No. 777,308

Claims priority, application United Kingdom, Jun. 17, 1976, 25141/76

Int. Cl.[2] B01J *21/04, 23/10, 23/48, 23/58*

U.S. Cl. 252—462 7 Claims

1. A catalyst suitable for catalysing oxidation and reduction processes in a gas and capable or removing oxygen from a gas containing an excess of oxygen and restoring at least a part of such removed oxygen to a gas having an oxygen deficiency, the catalyst comprising a support carrying at least one precious metal selected from platinum, gold, silver, rhodium, ruthenium, palladium, iridium and osmium and a perovskite selected from the group consisting of:

$La_{0.8}Sr_{0.2}CoO_3$,

$La_{0.8}Ba_{0.2}CoO_3$,

$La_{0.8}Ba_{0.2}Co_{0.987}Rh_{0.013}O_3$ or

$La_{0.8}Sr_{0.2}Co_{0.98}Rh_{0.013}O_3$

the support being stabilized by the inclusion therein of lanthanum oxide or barium oxide.

4,162,236

DETERGENT COMPOSITIONS CONTAINING MIXTURES OF ALKYLBENZENE SULFONATES AS THE DETERGENT ACTIVE

Harold E. Feierstein, Creve Coeur, Mo., and Mark E. Davis, Lexington, Ky., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 867,074, Jan. 5, 1978, abandoned. This application Sep. 25, 1978, Ser. No. 945,732

Int. Cl.[2] C11D *1/22*

U.S. Cl. 252—558 5 Claims

1. A solid detergent composition which comprises at least 5 percent by weight, based on the total weight of the composition, of a surfactant consisting essentially of a mixture of alkyl benzene sulfonates having 10 to 15 carbons in the alkyl chains wherein

(A) greater than 55 mole percent of the alkyl benzene sulfonates have alkyl chains of greater than 11 carbon atoms,

(B) the alkyl chains having 12 or more carbon atoms have a 2-phenyl content of greater than 60 percent of the total 2-phenyl content.

4,162,237

CEMENT FOR WALL AND FLOOR COVERINGS AND THE LIKE

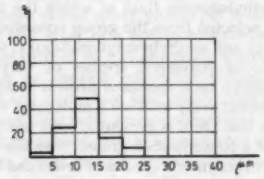
Albert Kauderer, Tobelwasenweg 23, 7315 Wilhelm, Fed. Rep. of Germany

Filed Apr. 11, 1977, Ser. No. 786,304

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1976, 2615725; Feb. 22, 1977, 2707571; Feb. 22, 1977, 2707570

Int. Cl.[2] C08L *1/28*

U.S. Cl. 260—17 R 32 Claims



1. A cement for attaching coverings to walls, floors, ceilings and similar bases, comprising:

an adhesive substance which, when dried, is flexible; and

a filler powder admixed with said adhesive substance, said filler powder being insoluble in and chemically non-reactive with said adhesive substance and substantially non-adherent to said adhesive substance and having a very small grain size such that the maximum of the distribution curve of the grain size lies in the region from 0.005 mm to 0.035 mm and wherein the grain size of at least the major portion by weight of said filler powder is uniform to within ± 0.018 mm, the cement having a viscosity such that the thickness of the cement in the dried condition is at least twice the average grain size of said filler powder; whereby, when said cement has dried, said coverings may be removed from said bases by pulling off said coverings to thereby split said cement in a manner which leaves a substantially continuous part of the cement layer on said bases and another such part on said coverings.

27. A covering for walls, floors, or ceilings or similar bases, one surface of which is supplied with a layer of a cement that comprises:

an adhesive substance which, when dried, is flexible:

a filler powder admixed with said adhesive substance, said filler powder being insoluble in and chemically non-reactive with said adhesive substance and substantially non-adherent to said adhesive substance and having a very small grain size such that the maximum of the distribution curve of the grain size lies in the region from 0.005 mm to 0.035 mm and wherein the grain size of at least the major portion by weight of said filler powder is uniform to within ±0.018 mm, the cement having a viscosity such that the thickness of the cement in the dried condition is at least twice the average grain size of said filler powder; whereby, when said cement has dried, said coverings may be removed from said bases by pulling off said coverings to thereby split said cement in a manner which leaves a substantially continuous part of the cement layer on said bases and another such part on said coverings.

4,162,238

FOUNDRY MOLD OR CORE COMPOSITIONS AND METHOD

Horacio E. Bergna, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 448,689, Mar. 6, 1974, abandoned, which is a continuation-in-part of Ser. No. 380,124, Jul. 17, 1973, abandoned. This application Mar. 24, 1976, Ser. No. 670,076

Int. Cl.[2] C08L *31/04;* B28B *7/34*

U.S. Cl. 260—29.6 S 26 Claims

1. A sand core or mold composition comprising of foundary sand, 1–6% by weight of the sand of an aqueous solution or dispersion of a firm-forming resin adhesive and 3 to 15% by weight of the sand of an aqueous binder comprising an aqueous sodium, potassium or lithium silicate solution or mixtures thereof and amorphous silica, the binder characterized by (1) a molar ratio of silica to alkali metal oxide of from 3.5:1 to 10:1; (2) a weight fraction of the total silica present as amorphous silica is from 2 to 75%; (3) a weight fraction of the total silica present as silicate ions is from 98 to 25% and the amorphous silica has a particle size of from 2 nanometers to 500 nanometers and the sand core or mold possesses a compressive strength sufficiently low to permit easy crushing after said core or mold is used in preparing a metal casting.

13. A method for making a sand core or a sand mold useful in the casting of molten metal which comprises mixing foundry sand 1–6% by weight of the sand of an aqueous solution or dispersion of a film-forming resin adhesive and 3 to 15% by weight of the sand of a binder which comprises an aqueous sodium, potassium or lithium silicate solution or mixtures thereof and amorphous silica having a particle size of from 2 nanometers to 500 nanometers, the amount of silicate and amorphous silica being adjusted to form a binder with (1) a molar ratio of silica to alkali metal oxide ranging from 3.5:1 to 10:1, (2) the weight fraction of total silica present as amorphous silica of from 2 to 75% and (3) a weight fraction of the total

silica present as silicate ions of from 98 to 25%, forming the sand and binder mixtures into the desired shape and setting the formed mixture.

4,162,239

PROCESS FOR THE PRODUCTION OF TRANSPARENT POLYMERS OF VINYL CHLORIDE WITH VERY HIGH IMPACT STRENGTH

René Nicolet, Fribourg, and Robert Schlierer, Dudingen, both of Switzerland, assignors to Lonza Ltd., Gampel, Valais, Switzerland

Continuation of Ser. No. 530,374, Dec. 6, 1974, abandoned. This application Aug. 27, 1976, Ser. No. 718,165

Claims priority, application Switzerland, Nov. 14, 1974, 15185/74

Int. Cl.[2] **C08L** *27/06*

U.S. Cl. 260—29.7 UP **18 Claims**

1. The process for the preparation of a transparent, weather-resistant vinyl chloride polymer having a very high impact strength by the polymerization of vinyl chloride either together with or without other copolymerizable monomers in aqueous dispersion by the emulsion polymerization method in the presence of at least one acrylic acid ester copolymer which consists essentially of emulsion polymerizing vinyl chloride or a monomer mixture containing at least 80 percent by weight of vinyl chloride in the presence of a dispersion of at least one acrylic acid copolymer containing of 90 to 99.7 percent by weight of units of at least one acrylic acid ester and 0.3 to 10 percent by weight of units of a polyfunctional monomer, said acrylic acid ester copolymer having a mean particle diameter of 30 to 150 nm, determined by soap titration, said acrylic acid ester copolymer being used in a quantity such that the resultant vinyl polymer contains 4 to 20 percent by weight of acrylic acid ester units, said acrylic acid ester being selected from the group consisting of propyl acrylate, isopropyl acrylate, butyl acrylate, isobutyl acrylate, hexyl acrylate, 2-ethyl hexyl acrylate, lauryl acrylate, myristyl acrylate and stearyl acrylate, and said polyfunctional monomer being selected from the group consisting of allyl acrylate, allyl methacrylate, allyl crotonate, allyl cinnamate, methallyl acrylate, methallyl methacrylate, monoallyl maleate, monallyl fumarate, diallyl oxalate, dimethallyl oxalate, diallyl glutarate, diallyl adipate, diallyl phthalate, diallyl terephthalate, tetra-allyl pyromellitate, diallyl maleate, dimethallyl maleate, diallyl fumarate, diallyl isocyanurate, triallyl cyanurate, triallyl phosphate, trimethylol propane diallyl ester, trimethylol propane diallyl ether monomethacrylate and tetra-allyl oxyethane.

4,162,240

PROCESS FOR PRODUCTION OF NOVEL POLYMER EMULSION

Minoru Hino, Takatsuki; Seimei Yasui, Takarazuka, and Akira Shintani, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Jul. 13, 1977, Ser. No. 815,263

Claims priority, application Japan, Jul. 22, 1976, 51-87806; Sep. 22, 1976, 51-114280; Mar. 25, 1977, 52-33471; Apr. 19, 1977, 52-45268

Int. Cl.[2] **C08L** *2/22*

U.S. Cl. 260—29.7 B **8 Claims**

1. A process for production of a polymer emulsion comprising emulsion polymerizing in an aqueous system at least one adduct which has been at least partially esterified, imidated, or amidated by reacting said adduct with a compound selected from at least one member of the group consisting of aminoethyl methacrylate, t-butylaminoethyl methacrylate, 2-hydroxyethyl methacrylate, 2-hydroxyethyl acrylate, 2-hydroxypropyl methacryalte, glycidyl methacrylate, glycidyl acrylate and N-methylol-methacrylamide in an aqueous system in the presence or absence of a vinyl monomer, said adduct being produced by adding an α,β-unsaturated dicarboxylic acid or anhydride thereof to a synthetic unsaturated polymer, having a number average molecular weight of 150 to 30,000 and an iodine value of 50 to 500, selected from at least one member of the group consisting of a diene polymer, C_5 petroleum resin and C_9 petroleum resin, wherein the addition ratio of the α,β-unsaturated dicarboxylic acid or anhydride thereof to the synthetic unsaturated resin is in the range of 3 to 60% by weight and wherein the partial esterification, imidation and amidation is carried out in the range of 10 to 90% of the total acid value of the adduct.

4,162,241

POLYVINYL CHLORIDE THERMOPLASTIC BLEND COMPOSITIONS HAVING IMPROVED GLASS TRANSITION TEMPRATURES

Nathan H. Canter, Edison, and Neville G. Thame, Montclair, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Apr. 14, 1977, Ser. No. 787,368

Int. Cl.[2] **C08L** *23/16, 27/06*

U.S. Cl. 260—30.8 R **8 Claims**

1. A polymeric blend composition which comprises:

(a) a polyvinyl chloride resin; and

(b) about 5 to about 20 parts by weight of a neutralized sulfonated elastomeric polymer per 100 parts by weight of said polyvinylchloride resin, said neutralized sulfonated elastomeric polymeric being formed from an elastomeric polymer being selected from the group consisting of a copolymer of an isoolefin and a conjugated multiolefin (Butyl rubber) and EPDM terpolymers, said blend having a glass transition temperature equal to or greater than a glass transition temperature of said polyvinyl chloride resin.

4,162,242

POLYOL STABILIZATION ADDITIVE FOR POLYPYRROLIDONE

Ralph House, El Sobrante, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 781,597, Mar. 28, 1977, abandoned. This application May 24, 1978, Ser. No. 908,889

Int. Cl.[2] **C08K** *5/05*

U.S. Cl. 260—30.8 R **11 Claims**

1. A composition of matter comprising a major amount of normally solid poly-2-pyrrolidone and 0.1–5 weight percent of a polyhydric alcohol having a boiling point of about 200°–300° C. or greater.

4,162,243

HIGH STRENGTH, EXTRUDABLE SILICONE ELASTOMER COMPOSITIONS

Chi-Long Lee, Midland; Myron T. Maxson, Sanford, and Leo F. Stebleton, Midland, all of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed May 8, 1978, Ser. No. 904,176

Int. Cl.[2] **C08L** *83/04*

U.S. Cl. 260—37 SB **21 Claims**

1. A silicone elastomeric composition consisting essentially of a product obtained by mixing

(A) 100 parts by weight of a triorganosiloxy endblocked polydimethylsiloxane fluid in which the triorganosiloxy units are selected from the group consisting of dimethylvinylsiloxy and methylphenylvinylsiloxy, said fluid being a mixture of polymeric species of varying molecular weight where each species is present in an amount sufficient to collectively provide a molecular weight distribution such that there is present at least one polymeric species (1) at a concentration greater than the concentrations of adjacent polymeric species of lower and higher molecular weight where polymeric species (1) is identified as a peak molecular weight as determined by gel permeation chromatographic analysis and there being a peak molecular weight of polymeric species in the range of from 68,000 to 135,000 at a major concentration, in said fluid the molecular weight of the lowest molecular weight

polymeric species being in the range of from 854 to 3146 and the molecular weight of the highest molecular weight species being in the range of from 174,000 to 370,000, the mixture of polymeric species having a molecular weight distribution such that a dispersity index has a value greater than 3.8,

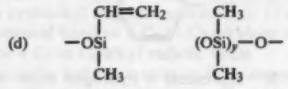
(B) from 20 to 60 parts by weight of a reinforcing amorphous silica having a surface area of greater than 100 square meters per gram, the surface of the silica having silicon atoms to which are bonded organosiloxane groups selected from the group consisting of

(a) $(CH_3)_3SiO—$,

(b) $CH_2{=}CH(CH_3)_2SiO\{(CH_3)_2SiO\}_x—$,

(c) $CH_2{=}CH(CH_3)(C_6H_5)SiO\{(CH_3)_2SiO\}_x—$, and

(d)



in which x is an integer of 0 to 20 and y is an integer of 1 to 5, the organosiloxane groups being present in an amount such that there is from 0.05 to 0.32 percent by weight vinyl based on the weight of the silica and the organosiloxane groups being present in a mole ratio such that there is from 7 to 50 moles of (a) for each mole of (b), (c), (d) or mixtures thereof,

(C) an amount of a fluid organohydrogensiloxane sufficient to provide from 1 to 3 inclusive silicon-bonded hydrogen atoms per vinyl radical in (A) and (B) combined, said organohydrogensilxoane having an average of at least three silicon-bonded hydrogen atoms per molecule and consisting essentially of units selected from a group consisting of methylhydrogensiloxane, dimethylsiloxane, dimethylhydrogensiloxy, trimethylsiloxy and SiO_2 units, and

(D) an amount of a platinum catalyst sufficient to provide at least one part by weight platinum per one million parts by weight of (A), said platinum catalyst being soluble in (A), the silicone elastomer composition having a viscosity such that at least 45 grams per minute of the composition can be extruded through a 3.175 millimeter orifice under a pressure of 620 kilopascals.

4,162,244

COATING COMPOSITIONS

James L. Bertram, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 25, 1978, Ser. No. 937,022
Int. Cl.[2] C09D *3/58*
U.S. Cl. 260—37 EP **5 Claims**

1. In a weldable coating composition comprising an electrically conductive pigment, an epoxy resin binder and solvent, the improvement which comprises employing as the epoxy resin binder, the reaction product of

(1) an epoxy resin having an average of more than one but less than three vicinal epoxy groups per molecule which is a polyclycidyl ether of a polyhydroxyl-containing compound or mixture of such epoxy resins wherein said epoxy resins have an epoxide equivalent weight of less than about 250 and that when said epoxy resin contains aromatic or cycloaliphatic groups substituted with halogen atoms said equivalent weight is calculated on the basis of the halogen atoms being hydrogen atoms; with

(2) (a) from about 90 to about 100 equivalent percent of a compound having only two amine hydrogen atoms and

(b) from about 0 to about 10 equivalent percent of a compound having only one amine hydrogen;

and wherein the epoxy:amine hydrogen equivalent ratio is from about 0.90:1 to about 1.1:1.

4,162,245

METHOD OF PREPARING AN IMPROVED ORGANIC RESIN COMPOSITION AND AN IMPROVED ORGANIC RESIN THEREBY

Warde T. Collins, and Mary D. Fey, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Jan. 9, 1978, Ser. No. 868,009
Int. Cl.[2] C08K *9/06*
U.S. Cl. 260—40 R **4 Claims**

1. A method of preparing an improved organic resin composition consisting of

(A) acidifying water to a pH of 3 to 5 using a water-miscible organic carboxylic acid;

(B) adding thereto, with constant agitation, chloropropyltrimethoxysilane and thereafter stirring the components (A) and (B) until the solution clears;

(C) adding to the solution particulate aluminatrihydrate and thoroughly mixing the combination of (A), (B), and (C) at a high speed for a time sufficient to treat the particulate aluminatrihydrate with the hydrolysis product of component (B);

(D) removing volatile materials from the combination to obtain a treated particulate aluminatrihydrate;

(E) mixing the product (D) with an organic resin capable of being heat cured and thereafter

(F) removing entrapped air from (E) to obtain an organic resin having a reduced viscosity over that of an unmodified organic resin.

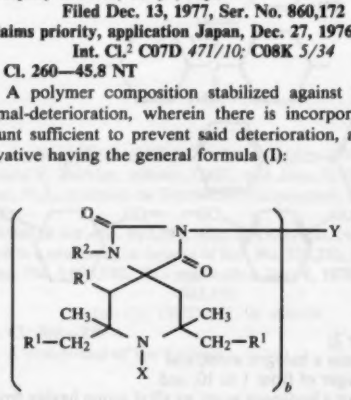
4,162,246

HYDANTOIN DERIVATIVES AND THEIR USE AS POLYMER STABILIZERS

Nobuo Soma; Syoji Morimura; Takao Yoshioka, and Tomoyuki Kurumada, all of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Dec. 13, 1977, Ser. No. 860,172
Claims priority, application Japan, Dec. 27, 1976, 51-157784
Int. Cl.[2] C07D *471/10*; C08K *5/34*
U.S. Cl. 260—45.8 NT **11 Claims**

9. A polymer composition stabilized against photo- and thermal-deterioration, wherein there is incorporated, in an amount sufficient to prevent said deterioration, a hydantoin derivative having the general formula (I):



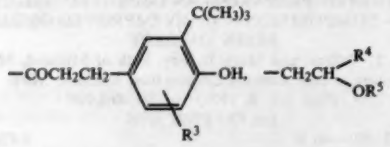
(I)

wherein:

R^1 represents a hydrogen atom or a methyl group;

R^2 represents a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an allyl group, an acetyl group or a benzyl group;

X represents a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an alkenyl group having 3 or 4 carbon atoms, a cyanoalkyl group having 2 or 3 carbon atoms, a 2,3-epoxypropyl group, a benzyl group, an aliphatic acyl group having up to 18 carbon atoms, or a group of formula



or —CH_2COOR^6 wherein:

R^3 represents an alkyl group having from 1 to 4 carbon atoms;

R^4 represents a hydrogen atom, a methyl group or a phenyl group;

R^5 represents a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, an allyl group, a benzyl group or an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms wherein the aromatic moiety is unsubstituted or has one or more C_1–C_4 alkyl and/or hydroxy substituents; and

R^6 represents an alkyl group having from 1 to 18 carbon atoms, an alkenyl group having 3 or 4 carbon atoms or a phenyl group;

b is 2 or 3; and

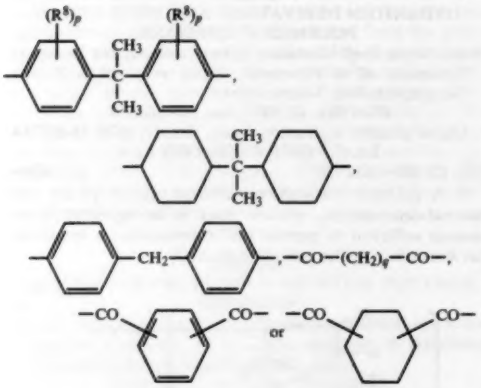
when b=2:

Y represents one of the groups of formula —$CH_2CH(OZ)CH_2$-[O-CH_2—$CH(OZ)CH_2]_2$—, —$CH_2CH(OZ)CH_2$-[$OCH_2C(R^7)H]_m$—$OCH_2CH(OZ)$—CH_2—, —$CH_2CH(OZ)C$-H_2—[OWO—$CH_2CH(OZ)CH_2]_n$—, or $CH_2CH(OZ)$—CH_2—in which:

m and n each represents an integer of from 1 to 10;

R^7 represents a hydrogen atom or a methyl group;

W represents one of the groups of formula



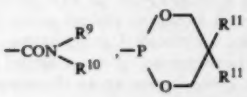
wherein:

p is 0, 1 or 2;

R^8 represents a halogen atom; and

q is an integer of from 1 to 10; and

Z represents a hydrogen atom, an alkyl group having from 1 to 18 carbon atoms, an allyl group, a benzyl group, an aliphatic, aromatic, araliphatic or alicyclic acyl group having up to 18 carbon atoms wherein the aromatic moiety is unsubstituted or has one or more C_1–C_4 alkyl and/or hydroxy substituents, or one of the groups of formulae



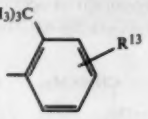
or —$P(OR^{12})_2$ in which:

R^9 represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

R^{10} represents an alkyl group having from 1 to 18 carbon atoms, a phenyl group, a substituted phenyl group having one or more methyl, chlorine and/or bromine substituents, a naphthyl group or a cyclohexyl group;

R^{11} represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms; and

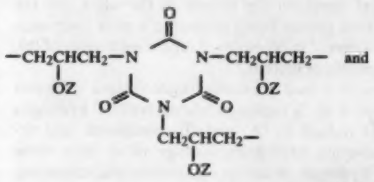
R^{12} represents an alkyl group having from 1 to 4 carbon atoms, a phenyl group or a group of formula



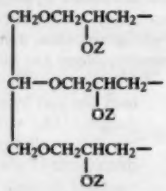
in which R^{13} represents a hydrogen atom or an alkyl group having from 1 to 4 carbon atoms;

when b=3:

Y represents one of the groups of formulae



and



in which Z is as defined above; or an acid addition salt thereof.

4,162,247

BIS-(ALKYLPHENYL)-ALKANECARBOXYLIC ACID HYDRAZIDES, THEIR PREPARATION AND USE

Norbert Mayer, Gablingen; Gerhard Pfahler, Augsburg, and Hartmut Wiezer, Gersthofen, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

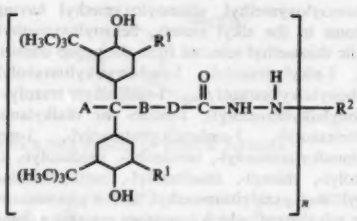
Filed Mar. 13, 1978, Ser. No. 885,905

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1977, 2711206

Int. Cl.[2] **C08K** *5/51, 5/49, 5/25;* **C07C** *103/22;* **C07F** *9/02*

U.S. Cl. 260—45.9 NC **6 Claims**

1. Compounds of the formula



I

in which

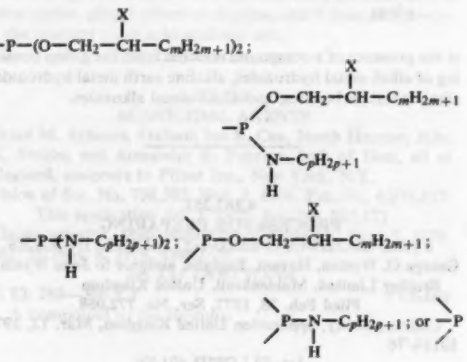
n is 1, 2 or 3;

A and B represent together with the carbon atom separating them a cycloalkyl ring having from 5 to 12 carbon atoms;

D is a chemical bond or a C_1 to C_3-alkylene radical and

R^1 is H or a C_1 to C_4-alkyl radical, while

R^2 is either (a) a hydrogen atom or (b) corresponding to the meaning of n, a mono-, bi- or tri-valent phosphorus containing radical having the structure:



in which m is an integer of from 0 to 30, p is an integer of from 10 to 20, and x is H or OH, and in the case (b) A may also be H or C_1 to C_8-alkyl and B may also be C_1 to C_8-alkylene.

4. Stabilized polyethylene or polypropylene wherein a compound as claimed in claim 1 is contained as stabilizer.

4,162,248

SOMATOSTATIN ANALOGS

Robert G. Strachan, Warrington; William J. Paleveda, Lansdale; Daniel F. Veber, Ambler, and Frederick W. Holly, Glenside, all of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 781,610, Mar. 28, 1977, which is a continuation-in-part of Ser. No. 732,692, Oct. 14, 1976, abandoned. This application Apr. 7, 1978, Ser. No. 894,266

Int. Cl.[2] A61K *37/02*; C07C *103/52*

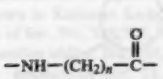
U.S. Cl. 260—112.5 S **12 Claims**

1. Compounds of the formula:

cyclo[(X)$_j$-(A)$_k$-(B)$_l$-Phe-Phe-(D- or L-)Trp-Lys-Thr-Phe-Thr-(C)$_m$]

wherein

X is



and n=0 to 4;

A is Lys, ε-INOC-Lysine;

B is Asn, Ala, α-aminobutyric acid;

C is Ser, Gly; j, k, l and m are 0 or 1, with the proviso that j, k, l, and m are not all 1 and not all 0; wherein the ring formed by the peptide backbone contains 24 to 33 atoms and pharmaceutically acceptable non-toxic acid addition salts thereof.

4,162,249

ANTHRANILIC ACID ARYLESTER-AZO-AMINONAPHTHOL SULFONIC ACID DYES

Michael Yelland, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

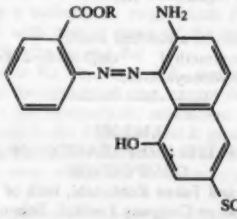
Filed Dec. 6, 1976, Ser. No. 747,993

Claims priority, application United Kingdom, Jan. 16, 1976, 1786/76

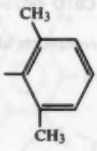
Int. Cl.[2] C09B *29/30*

U.S. Cl. 260—199 **1 Claim**

1. A water soluble monoazo dye which, in the form of the free acid, has the formula:



wherein R represents a radical of the formula:



4,162,250

3-AMINOAZETIDINONE DERIVATIVES

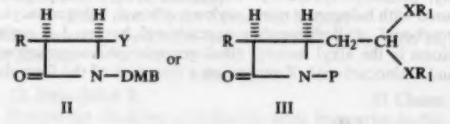
Thomas F. Buckley, Albany, Calif., and John G. Gleason, Delran, N.J., assignors to SmithKline Corporation, Philadelphia, Pa.

Division of Ser. No. 822,774, Aug. 8, 1977, Pat. No. 4,122,262, which is a continuation-in-part of Ser. No. 721,251, Sep. 8, 1976, Pat. No. 4,089,956. This application Jun. 6, 1978, Ser. No. 913,181

Int. Cl.[2] C07D *205/08, 403/04*

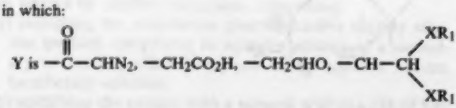
U.S. Cl. 260—239 A **10 Claims**

1. A compound of the formula:

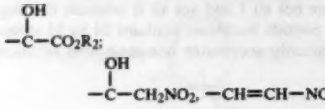


II III

in which:



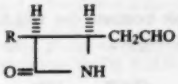
-continued



P is hydrogen or

R is amino, azido or blocked amino;
R_1 is lower alkyl;
R_2 is a carboxyl blocking group;
X is thio or oxy; and
DMB is 2,4-dimethoxybenzyl.

5. A compound of the formula:



in which R is azido or a blocked amino.

10. Diphenylmethyl cis[3-azido-2-formylmethyl-4-oxoazetidinyl]-1-hydroxyacetate.

4,162,251

PROCESS FOR THE PREPARATION OF β-LACTAM COMPOUNDS

Tetsuo Hiraoka, and Takeo Kobayashi, both of Tokyo, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

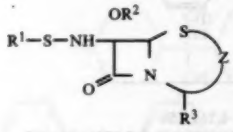
Division of Ser. No. 779,907, Mar. 21, 1977. This application Nov. 11, 1977, Ser. No. 850,719

Claims priority, application Japan, Apr. 5, 1976, 51-37958

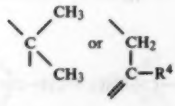
Int. Cl.[2] C07D *499/04, 501/02*

U.S. Cl. 260—239.1 **4 Claims**

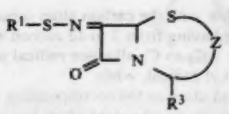
1. A process for the preparation of a compound having the formula



wherein R^1 represents phenyl group substituted with from one to 5 members selected from nitro, cyano, halogen or alkoxycarbonyl having 1–4 carbon atoms in the alkyl moiety; R^2 represents an alkyl group having 1–4 carbon atoms; R^3 represents carboxyl group or a protected carboxyl group selected from the group consisting of an alkoxycarbonyl having 1–4 carbon atoms in the alkoxy moiety, halogenoalkoxycarbonyl having 1–4 carbon atoms in the alkoxy moiety, benzyloxycarbonyl and benzyloxycarbonyl substituted with nitro or methoxy in the phenyl group, diphenylmethoxycarbonyl, trialkylsilyloxycarbonyl having 1–4 carbon atoms in each alkyl moiety, phenacyloxycarbonyl and phenacyloxycarbonyl substituted with halogen or nitro, acyloxycarbonyl, halogenoacyloxycarbonyl, dialkylphosphinooxycarbonyl having 1–4 carbon atoms in the alkyl moiety, dihalogenophosphinooxycarbonyl, and aminocarbonyl; Z represents a fragment of the formula



wherein R^4 is selected from the group consisting of alkyl having 1–4 carbon atoms, alkoxy having 1–4 carbon atoms, halogen, carbamoyloxymethyl, alkanoyloxymethyl having 1–4 carbon atoms in the alkyl moiety, benzoyloxymethyl, and heterocyclic thiomethyl selected from the group consisting of tetrazolyl, 1-alkyltetrazolyl-, 1-carboxyalkyltetrazolyl-, 1-alkoxycarbonylalkyltetrazolyl-, 1-sulfoalkyltetrazolyl-, 1-aminosulfonylalkyltetrazolyl-, 1-mono- or dialkylaminosulfonylalkyltetrazolyl-, 1-aminoalkyltetrazolyl-, 1-mono-or dialkylaminoalkyltetrazolyl-, isoxazolyl-, imidazolyl-, thiazolyl-, triazolyl-, thienyl-, thiadiazolyl-, methylthiadiazolyl-, pyrimidinyl- and pyridylthiomethyl, and a pharmaceutically acceptable salt thereof; which comprises reacting a compound having the formula



with an alcohol having the formula

R^2OH

in the presence of a compound selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, alkali metal carbonates, and alkali metal alkoxides.

4,162,252

PROCESS FOR PREPARING 3-[(BENZAMIDOPIPERID-1-YL)ALKYL] INDOLES

George O. Weston, Havant, England, assignor to John Wyeth & Brother Limited, Maidenhead, United Kingdom

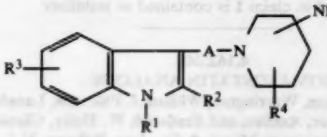
Filed Feb. 28, 1977, Ser. No. 772,058

Claims priority, application United Kingdom, Mar. 12, 1976, 10114/76

Int. Cl.[2] C07D *401/06*

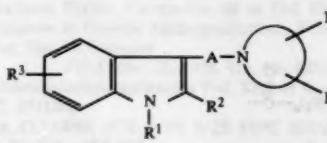
U.S. Cl. 546—201 **5 Claims**

1. A process for preparing compounds of general formula (III)



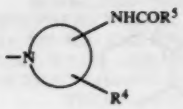
(III)

wherein R^1 represents hydrogen, lower alkyl, lower aralkyl or aroyl, R^2 represents hydrogen, lower alkyl or aryl, R^3 represents hydrogen, halogen, lower alkoxy, hydroxy or lower alkyl, R^4 represents hydrogen, halogen or lower alkyl, R^5 represents aryl (including heterocyclic aryl), lower alkoxy, aryloxy, lower aralkyl, lower aralkyloxy, diaryl-lower alkyl or cycloalkyl of 5 to 7 carbon atoms, and A is an alkylene radical of 1–4 carbon atoms in which a compound of formula I



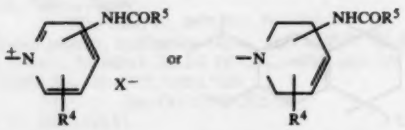
(I)

in which formula



(II)

represents a ring system of general formula



(IIa) (IIb)

wherein A, R^1, R^2, R^3, R^4 and R^5 are as defind in connection with formula (III) and X is an anion, is reduced with an alkali-metal borohydride in a solvent selected from alkanols of 3–4 carbon atoms, glycol ethers or dioxane, and if desired converting the product to an acid addition salt.

4,162,253

ACARICIDAL AGENTS

Richard M. Acheson, Oxford; Ian R. Cox, North Harrow; John K. Stubbs, and Alexander B. Penrose, both of Deal, all of England, assignors to Pfizer Inc., New York, N.Y.

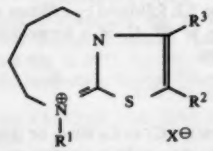
Division of Ser. No. 738,382, Nov. 2, 1976, Pat. No. 4,076,817. This application Jul. 1, 1977, Ser. No. 812,172

Claims priority, application United Kingdom, Nov. 5, 1975, 45961/75; Nov. 5, 1975, 45962/75

Int. Cl.² C07D *513/04*

U.S. Cl. 260—306.7 T **9 Claims**

1. A compound of the formula:



wherein $X^{\ominus}$ is a pharmaceutically acceptable anion; R^1 is an alkyl group having from 10 to 20 carbon atoms; when taken separately, each of R^2 and R^3 is selected from the group consisting of hydrogen, alkyl having from one to six carbon atoms, phenyl and phenyl substituted by up to two members which may be the same or different and are selected from the group consisting of fluoro, chloro, bromo, hydroxy, alkyl having from one to three carbon atoms, alkoxy having from one to three carbon atoms, cyano, nitro and trifluoromethyl, and when R^2 and R^3 are taken together they form a tetramethylene group.

4,162,254

BENZOXAZOLE ULTRAVIOLET STABILIZERS

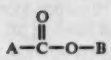
Gether Irick, Jr., and Charles A. Kelly, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 745,717, Nov. 29, 1976, abandoned, which is a continuation of Ser. No. 484,845, Jul. 1, 1974, abandoned. This application Oct. 12, 1977, Ser. No. 841,264

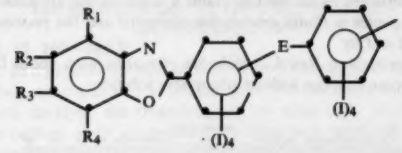
Int. Cl.² C07D *263/54*

U.S. Cl. 260—307 D **28 Claims**

1. A composition of matter having the formula



wherein A is a member having the formula:



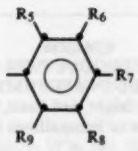
wherein

R_1, R_2, R_3 and R_4 are hydrogen, chloro, bromo, lower alkyl, cyclohexyl, phenyl, lower alkylphenyl, phenyl-substituted-phenyl, alkoxy, cyano and the substituents R_1 and R_2, R_2 and R_3, and R_3 and R_4 combined with the carbon atoms to which they are attached are joined alkylene groups completing a carbocyclic ring, which ring can also be substituted with one or more of the substituents listed above for R_1, R_2, R_3 and R_4;

I is the same as R_1, R_2, R_3 and R_4 and is present on all positions of the benzenoid ring, except the carbon atoms attached to the heterocyclic substituent and the carbon atom attached to the E group, said E group is attached to the benzenoid ring in either the meta or para position from the carbon atom connected to the heterocyclic substituent; and

E is a member selected from the group consisting of, lower alkyloxy, oxy-lower alkyl and oxy;

B is a group having the formula



wherein at least one R_5 or R_9 is hydrogen and the other R_5, R_6, R_7, R_8 and R_9 are hydrogen, lower alkyl, cyclohexyl, phenyl, lower alkylphenyl, phenyl-substituted-phenyl, alkoxy, hydroxy, carboalkoxy, nitrile, chloro, bromo and the substituents R_5 and R_6, R_6 and R_7, R_7 and R_8, and R_8 and R_9 combined with the carbon atoms to which they are attached are joined alkylene groups completing a carbocyclic ring which can be substituted with any of the substituents listed above for R_5, R_6, R_7, R_8 and R_9.

4,162,255

PROCESS FOR EXTRACTING ARISTOLOCHIC ACIDS

Rolf Madaus, Koln-Bruck, and Klaus Gorler, Bensberg-Refrath, both of Fed. Rep. of Germany, assignors to Dr. Madaus & Co., Cologne, Fed. Rep. of Germany

Filed Oct. 17, 1977, Ser. No. 843,004

Claims priority, application Fed. Rep. of Germany, Oct. 15, 1976, 2646545

Int. Cl.² C07D *317/44*

U.S. Cl. 260—340.5 R **17 Claims**

1. Process for obtaining aristolochic acids from aristolochic plant species by alkaline extraction, comprising:

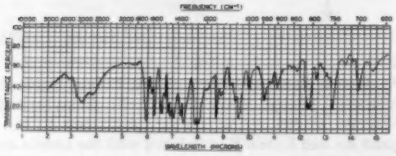
(a) extracting the aristolochic plant species in slightly alkaline medium comprising an aqueous solution of a secondary or tertiary alkali phosphate or an aqueous sodium bicarbonate solution;

(b) acidifying the extract with a mineral acid to a pH of 5 to 3;

(c) dissolving the precipitate in an ester of an aliphatic carboxylic acid of 1 to 10 carbon atoms of an alcohol of 1 to 10 carbon atoms, and filtering off insoluble components;
(d) extracting the obtained solution with aqueous alkali;
(e) acidifying the extract with a mineral acid to a pH value of 5 to 3; and
(f) recrystallizing the precipitated aristolochic acids.

17. Process as claimed in claim 1 wherein the aristolochic plant species is *Radix aristolochia clematitis* and the process is carried out by

(a) extracting *Radix aristolochia clematitis* with about 0.06 molar aqueous sodium phosphate solution:



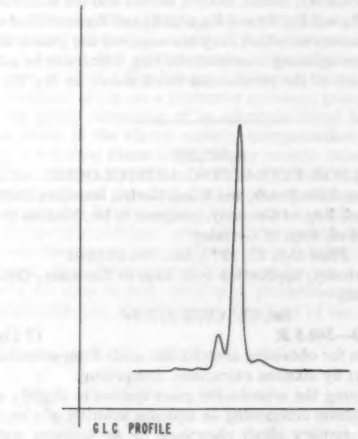
(b) acidifying the resulting extract with diluted sulfuric acid, hydrochloric acid or phosphoric acid to a pH value of about 4.0;
(c) dissolving the precipitate in ethylacetate and filtering off insoluble components from the extract;
(d) extracting the obtained solution with 0.1 N aqueous sodium hydroxide solution;
(e) acidifying the extract with dilute sulfuric acid to a pH value of 4.0; and
(f) separating the precipitated product and recrystallizing same from a solution of N,N-dimethyl formamide containing, in an amount of 20% based on the N,N-dimethyl formamide used, a mixture of methanol/ethyl acetate (2:1).

4,162,256

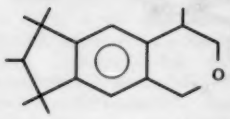
PROCESS FOR THE PRODUCTION OF COMPOUNDS USEFUL IN PERFUMERY

Mark A. Sprecker, Sea Bright, and Ernst T. Theimer, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

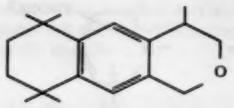
Filed Apr. 19, 1978, Ser. No. 897,903
Int. Cl.[2] C07D *311/04*; C07C *49/76*
U.S. Cl. 260—345.2 **7 Claims**



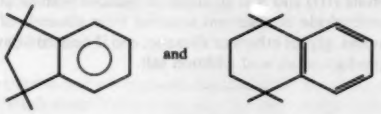
1. A process for preparing an isochroman derivative having a structure selected from the group consisting of



and



comprising the steps of reacting a hydrocarbon reactant which is an indane or tetrahydronaphthalene derivative having a structure selected the group consisting of:



with propylene oxide in the presence of a solvent consisting essentially of at least one aliphatic saturated C_5–C_{10} hydrocarbon, said, aliphatic saturated hydrocarbon being halogen-free, at a temperature between −20° C. and −5° C. in the presence of an aluminum chloride catalyst; the weight ratio of the aliphatic saturated hydrocarbon to the indane or tetrahydronaphthalene derivative being from 1:10 up to 10:1; the mole ratio of aluminum chloride to propylene oxide being from 1:1 up to 2:1; the mole ratio of indane or tetrahydronaphthalene derivative to propylene oxide being from 1:1 up to 10:1; followed by addition of a lower C_1–C_6 alkanol at a temperature of −20° C. to 0° C.; the mole ratio of aluminum chloride to C_1–C_6 alkanol being from 2:1 up to 1:2; followed by addition at a temperature of from 20° C. up to 80° C. of a formaldehyde equivalent having the structure:

$$R'_{11}—O—CH_2—O—R'_{11}$$

wherein R'_{11} represents C_1 to C_6 alkyl, or paraformaldehyde; and then quenching the resulting reaction mass by pouring it into water.

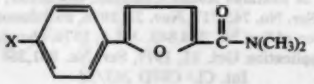
4,162,257

N,N-DIMETHYL-5-PHENYL-2-FURAMIDES

Stanford S. Pelosi, Jr., and Chia-Nien Yu, both of Norwich, N.Y., assignors to Morton-Norwich Products, Inc., Norwich, N.Y.

Filed Jul. 10, 1978, Ser. No. 922,862
Int. Cl.[2] C07D *307/68*
U.S. Cl. 260—347.3 **3 Claims**

1. A compound of the formula:



wherein X represents amino or chloro.

4,162,258

NOVEL COMPOUNDS SPIRO[5-ISOPROPYLBICYCLO[3.1.0]HEXANE-2,2'-OXIRANES], PROCESS FOR THE PRODUCTION OF THE NOVEL COMPOUNDS, AND PROCESS FOR THE PRODUCTION OF SABINENE HYDRATES THEREFROM

Moriaki Higo, Hiratsuka; Haruhiko Toda, Minami-ashigara; Kunitomo Suzuki, Yamanishi, and Yasukuni Nishida, Odawara, all of Japan, assignors to The Lion Dentifrice Co., Ltd., Tokyo, Japan

Filed Mar. 27, 1978, Ser. No. 890,337

Claims priority, application Japan, Apr. 6, 1977, 52/39199; Jun. 6, 1977, 52/66567; Jun. 6, 1977, 52/66568; Jun. 16, 1977, 52/71396; Sep. 29, 1977, 52/117160

Int. Cl.[2] C07D *303/04*

U.S. Cl. 260—348.11 3 Claims

1. Spiro[5-isopropylbicyclo[3.1.0]hexane-2,2'-oxiranes].

4,162,259

FUSIDIC ACID DERIVATIVES

Welf von Daehne, Rungsted Kyst, and Poul R. Rasmussen, Frederikssund, both of Denmark, assignors to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske fabrik Produktionsaktienselskab), Ballerup, Denmark

Continuation of Ser. No. 744,978, Nov. 24, 1976, Pat. No. 4,100,276. This application May 16, 1978, Ser. No. 906,664

Claims priority, application United Kingdom, Dec. 3, 1975, 49714/75; Apr. 20, 1976, 16015/76

Int. Cl.[2] A61K *31/56;* C07J *9/00*

U.S. Cl. 260—397.1 9 Claims

1. 3α,11α-dihydroxy-16β-(2'-methlyphenyl) thiofusida-13(17),24-dien-21-oic acid and pharmaceutically acceptable, non-toxic salts or easily hydrolysable esters thereof.

4,162,260

OIL PURIFICATION BY ADDING HYDRATABLE PHOSPHATIDES

Jacobus C. Segers, Nieuwerkerk aan de Ijssel, Netherlands, assignor to Lever Brothers Company, New York, N.Y.

Filed Sep. 6, 1977, Ser. No. 830,720

Claims priority, application United Kingdom, Sep. 10, 1976, 37643/76

Int. Cl.[2] C11B *3/04;* C09F *5/10*

U.S. Cl. 260—424 22 Claims

1. A process for removing impurities from triglyceride oils comprising admixing a hydratable phosphatide with said oils and separating from said oil said phosphatide together with impurities of the oil by any conventional degumming process.

14. Process according to claim 1, in which after the addition of the phosphatide and before the degumming with water an acid or anhydride is added.

4,162,261

NOVEL SOLVENTS FOR THE CATALYTIC PROCESS FOR MAKING POLYHYDRIC ALCOHOLS

Leonard Kaplan, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 727,646, Sep. 29, 1976, abandoned. This application Sep. 13, 1977, Ser. No. 832,384

Int. Cl.[2] C07C *27/06*

U.S. Cl. 260—449 L 9 Claims

1. In the process which comprises making alkane polyols by reacting hydrogen and oxides of carbon in a solvent solution containing a rhodium carbonyl complex the improvement which comprises employing as a solvent a crown ether consisting essentially of carbon, hydrogen and oxygen.

4,162,262

PROCESS FOR PRODUCING TWO-CARBON ATOM COMPOUNDS FROM SYNTHESIS GAS WITH MINIMAL PRODUCTION OF METHANOL

Paul C. Ellgen, Saint Albans, and Madan M. Bhasin, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 669,480, Mar. 23, 1976, abandoned. This application Oct. 11, 1977, Ser. No. 841,054

Int. Cl.[2] C07C *27/06*

U.S. Cl. 260—449 R 8 Claims

1. In a process for the reaction of a synthesis gas containing carbon monoxide and hydrogen in the presence of a hydrogenation catalyst, the improvement for selectively producing two-carbon atom oxygenated hydrocarbon products while minimizing the production of methanol which comprises continuously contacting said synthesis gas with a heterogeneous catalyst comprising rhodium in combination with at least one element selected from the group consisting of thorium and uranium, the mole ratio of uranium and/or thorium to rhodium being at least 1:1000, at reaction conditions such that product efficiencies based on carbon consumption in excess of 10 percent are achieved and ethanol, acetic acid and acetaldehyde are formed in an amount which is at least about 50 weight percent of the two or more carbon atom compounds obtained by the reaction, and the conversion of CO is limited to no more than about one-fourth, whereby the production of methanol is reduced such that the carbon efficiency to methanol is lower than the corresponding carbon efficiency when thorium and uranium are absent from the catalyst, which reaction conditions include a temperature within the range of from about 150°–450° C., a pressure within the range of from about 15–10,000 psig, and a mole ratio of hydrogen to carbon monoxide within the range of from about 20:1 to 1:200.

4,162,263

MANUFACTURE OF ALIPHATIC OR CYCLOALIPHATIC ISOCYANATES

Fritz Zanker, Worms, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 5, 1978, Ser. No. 867,145

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1977, 2703281

Int. Cl.[2] C07C *118/00*

U.S. Cl. 260—453 P 4 Claims

1. A process for the manufacture of an isocyanate of the formula

$$R-N=C=O$$

where R is an aliphatic radical of 1 to 10 carbon atoms or a cycloaliphatic radical of 5 to 12 carbon atoms, which comprises thermally decomposing an aliphatic or cycloaliphatic carbamic acid halide of the formula

$$R-\underset{\displaystyle H}{\overset{|}{N}}-CO-X \qquad [II]$$

where R has the above meaning and X is halogen, in the presence of an inert organic solvent which has a lower boiling point than that of the resulting isocyanate, in a reaction vessel surmounted by a rectifying unit which is in turn surmounted by a reflux condenser, and under reflux conditions, condensing the resulting isocyanate in the rectifying unit at a temperature above the boiling point of the solvent at the prevailing pressure, removing the hydrogen halide formed during the decomposition through the reflux condenser and condensing the solvent in the reflux condenser.

4,162,264

PROCESS FOR PREPARING DIPHENYLPHOSPHINYLACETIC ACID HYDRAZIDE

Alexandr I. Razumov, ulitsa Akademika Gubkina, 17, kv. 34; Raisa I. Tarasova, ulitsa 8 Marta, 2, kv. 28; Valentina G. Nikolaeva, ulitsa Kurchatova, 4, kv. 66, and Rimma L. Yafarova, ulitsa Zhdanova, 66, kv. 62, all of Kazan, U.S.S.R.

Filed Oct. 5, 1977, Ser. No. 839,554
Int. Cl.[2] C07C *102/00*
U.S. Cl. 260—558 H 7 Claims

1. A process for preparing diphenylphosphinylacetic acid hydrazide comprising reacting diphenylchlorophosphine with ethylene oxide in a medium of an inert organic solvent, heating the reaction mixture in the presence of an alkyl ester of a haloacetic acid to the formation of an alkyl ester of diphenylphosphinylacetic acid, and reacting the alkyl ester of diphenylphosphinylacetic acid with hydrazine hydrate.

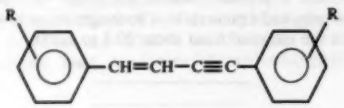
4,162,265

AROMATIC ENYNE COMPOUNDS AND THEIR SYNTHESIS

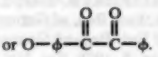
Fred E. Arnold, Centerville; Bruce A. Reinhardt, New Carlisle, and Frederick L. Hedberg, Xenia, all of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Sep. 27, 1978, Ser. No. 946,290
Int. Cl.[2] C07C *87/52, 49/76, 39/18*
U.S. Cl. 260—578 4 Claims

1. A difunctional aromatic enyne compound having the following formula:



in which R is NH_2, OH



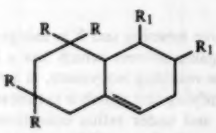
4,162,266

TRIMETHYL-ACETYL OCTALINS, PROCESS FOR MAKING AND FRAGRANCE COMPOSITIONS CONTAINING SAME

Daniel Helmlinger, Dübendorf, and Peter Naegeli, Wettingen, both of Switzerland, assignors to Givaudan Corporation, Clifton, N.J.

Filed Jun. 14, 1976, Ser. No. 695,349
Claims priority, application Switzerland, Jun. 25, 1975, 8251/75
Int. Cl.[2] C07C *49/61*
U.S. Cl. 260—586 F 2 Claims

1. An amber aroma-possessing mixture of compounds of the general formula



(I)

wherein three of the R-symbols represent methyl groups and the fourth R-symbol represents a hydrogen atom and one of the R_1-symbols represents a hydrogen atom and the other R_1-symbol represents an acetyl group.

4,162,267

PRODUCTION OF CYCLOHEXANONE

William B. Fisher, and Jan F. Van Peppen, both of Chester, Va., assignors to Allied Chemical Corporation, Morris Township, Morris County, N.J.

Filed Jun. 22, 1978, Ser. No. 918,134
Int. Cl.[2] C07C *27/00, 29/20, 45/00*
U.S. Cl. 260—586 P 10 Claims

1. A controlled process for preparation of cyclohexanone by liquid phase, catalytic hydrogenation of phenol in 2 to 8 hydrogenation stages by using a sodium-promoted palladium-on-carbon catalyst at a temperature of 135° C. to 184° C. and correlating a predetermined mole ratio of phenol to cyclohexanone with a predetermined maximum temperature in each of the hydrogenation stages, whereby intrinsic safety of operation is achieved by operating at temperatures at or below the atmospheric boiling point in each reactor, said process being further characterized by use of a hydrogenation gas comprising hydrogen and nitrogen and recycling unreacted gas to the reaction to promote flashing overhead of product cyclohexanone, at least part of the unreacted gas being cooled to cryogenic temperatures prior to recycling to remove excess inerts from the system.

4,162,268

PROCESS FOR PREPARING DIACETYLBENZENE

Tetsuya Miyake; Kohji Noguchi, and Kohichi Fujimoto, all of Kawasaki, Japan, assignors to Asahi Kasei Kogyo K.K., Osaka, Japan

Filed Oct. 6, 1977, Ser. No. 840,073
Claims priority, application Japan, Oct. 22, 1976, 51-126188
Int. Cl.[2] C07C *45/04*
U.S. Cl. 260—592 17 Claims

1. A process for preparing diacetylbenzene using a liquid phase oxidation reaction which comprises contacting a heterogenous mixture of (A) about 98 to about 25 percent by volume of an organic liquid phase containing at least one compound selected from the group consisting of diethylbenzene and ethylacetophenone and (B) about 2 to about 75 percent by volume of an aqueous liquid phase containing, as a catalyst, at least about 0.01 mol/l of at least one water-soluble salt selected from the group consisting of the acetates, propionates, sulfates, nitrates and chlorides of manganese (II), cobalt (II), nickel (II), chromium (III), copper (II) and iron (III) and having a pH of about 1 to about 6 with a molecular oxygen-containing gas at a temperature of about 100° C. to about 180° C. under a pressure of about 1 to about 50 Kg/cm^2 to effect liquid phase oxidation reaction; separating the resulting reaction mixture into the aqueous liquid phase and the organic liquid phase; and recovering diacetylbenzene from the separated organic liquid phase by distillation.

4,162,269

PURIFICATION PROCESS FOR 3-PHENOXYBENZALDEHYDE

Masato Mizutani, Takarazuka; Akio Higo, Osaka; Nobuo Ohno, Toyonaka, and Hajime Hirai, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 16, 1977, Ser. No. 825,154
Claims priority, application Japan, Aug. 20, 1976, 51/100040
Int. Cl.[2] C07C *45/24*
U.S. Cl. 260—600 R 3 Claims

1. A process of purifying 3-phenoxybenzaldehyde which comprises reacting crude 3-phenoxybenzaldehyde with an alkali metal or ammonium bisulfite or a metabisulfite in the presence of an organic quaternary ammonium salt, an inorganic acid salt of organic tertiary amines or a macrocyclic polyether as a catalyst, isolating the resulting 3-phenoxybenzaldehyde bisulfite adduct, and decomposing it by using an acid or a base or by heating, wherein the molar ratio of the catalyst to 3-phenoxybenzaldehyde is from 0.001 to 0.3,

wherein the molar ratio of the alkali metal or ammonium bisulfite to 3-phenoxybenzaldehyde is from 1.0 to 1.5 and the molar ratio of the metabisulfite to 3-phenoxybenzaldehyde is from 0.5 to 0.75, wherein the reaction temperature is 0° to 80° C., and wherein the reaction medium is water or a mixture of water and a difficulty water-soluble solvent containing neither ketone group nor aldehyde group, wherein the organic quaternary ammonium salt has the formula $R_1R_2R_3R_4NX$ in which R_1 is a straight-chain or branched alkyl having 1 to 20 carbon atoms, phenyl, benzyl or 3-phenoxybenzyl, R_2 R_3 and R_4 are a straight-chain or branched alkyl having 1 to 12 carbon atoms which may be the same or different and X is halogen or hydroxyl; wherein the organic acid salt of the organic tertiary amine is a hydrochloride, hydrobromide, sulfate, nitrate, sulfite bisulfate, or bisulfite of triethylamine, trimethylamine, triethanolamine, N-methylpyrrolidine, or triethylenediamine; and wherein the macrocyclic polyether is 2,3,11,12-dibenzo-1,4,7,10,13,16-hexaoxacyclooctadeca-2,11-diene(dibenzo-18-crown-6), 2,3,11,12-dicyclohexyl-1,4,7,10,13, 16-hexaoxacyclooctadecane(dicyclohexyl-18-crown-6), 4,7,13,18-tetraoxa-1,10-diazabicyclo[8,5,5]eicosane, 4,7,13,16,21-pentaoxa-1,10-diazabicyclo[8,8,5]tricosane, 4,7,13,16,21,24-hexaoxa-1,10-diazabicyclo[8,8,8]hexacosane, or 5,6-benzo-4,7,13,16,21, 24-hexaoxa-1,10-diazabicyclo[8,8,8]-hexacosane.

4,162,270

PROCESS FOR PRODUCING 4,4'-DIHYDROXYDIPHENYLSULFONE OF HIGH PURITY

Eiji Ogata; Koji Ono, and Shoji Nakagaki, all of Wakayama, Japan, assignors to Konishi Chemical Industry Co., Ltd., Wakayama, Japan

Continuation-in-part of Ser. No. 771,546, Feb. 24, 1977, abandoned. This application Apr. 14, 1978, Ser. No. 896,611

Int. Cl.² C07C *147/10*

U.S. Cl. 260—607 AR **3 Claims**

1. A process for producing 4,4'-dihydroxydiphenyl sulphone of extremely high purity which comprises the steps of reacting phenol with sulfuric acid in a solvent inert to the reactants under refluxing while separating off the water produced by the reaction until at least about 80% of the water to be produced is removed from the reaction system, and then removing said solvent progressively and finally substantially completely from the reaction system while maintaining the reaction mixture at a temperature of 160° to 200° C. throughout the solvent removal to effect isomerization of 2,4'-dihydroxydiphenylsulfone to 4,4'-dihydroxydiphenyl sulfone.

4,162,271

SELECTIVE HYDROGENATION OF CYCLOPENTADIENE TO FORM CYCLOPENTENE USING RANEY NICKEL CATALYST AND ALCOHOLS BOILING ABOVE 95° C. IN THE REACTION MIXTURE

Lawson G. Wideman, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Nov. 11, 1977, Ser. No. 850,576

Int. Cl.² C07C *5/02*

U.S. Cl. 585—274 **5 Claims**

1. In a process for the preparation of cyclopentene which comprises selectively hydrogenating cyclopentadiene in the liquid phase by contacting cyclopentadiene with hydrogen in the presence of a hydrogenation catalyst comprising a highly dispersed form of nickel selected from the group comprising Raney nickel or a modified Raney nickel the improvement comprising using an alcohol boiling above 99° C. as the reaction medium and in which the volume ratio of alcohol to cyclopentadiene ranges from 1/1 to 10/1.

4,162,272

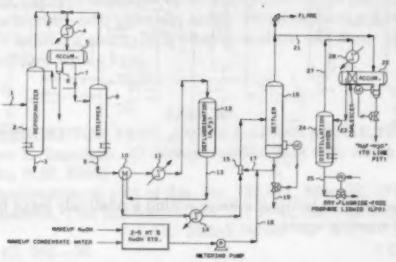
SAFER PRODUCTION OF DRY LIQUID PROPANE SUBSTANTIALLY FREE FROM HF AND ORGANIC FLUORIDE

Lucien H. Vautrain, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 10, 1978, Ser. No. 868,363

Int. Cl.² C07C *9/14*

U.S. Cl. 62—24 **4 Claims**



1. A process for the production of a liquid propane substantially free from organic fluoride, hydrogen fluoride and water, in a safe manner, the steps which comprise obtaining a stream of propane in a depropanizing zone wherein a hydrocarbon stream containing propane is fractionated to obtain said propane stream, passing the propane-containing stream to an HF stripping zone to strip HF from said propane stream, heating the liquid propane stream separated from said HF stripping zone to a temperature at which organic fluorides contained therein can be decomposed in a defluorinating zone, containing aluminum fluoride, passing said heated propane stream to said defluorinating zone, to break up organic fluorides to form HF in said propane stream, cooling said defluorinated propane stream and passing same into a mixing section, which is relatively small compared with the volume of a settling zone in which the phases are to be settled and separated, into a contact with a flowing stream of aqueous sodium hydroxide solution having a concentration of not over about 5 percent by weight sodium hydroxide to neutralize hydrogen fluoride, forming sodium fluoride, and immediately passing the thus contacted mixture into said settling zone, recovering from said settling zone a propane phase and drying said propane phase to obtain said liquid propane substantially free from HF, organic fluorides and water.

4,162,273

ALKALINE TREATMENT OF LIQUID PROPANE CONTAINING HF

Frank W. Skraba, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

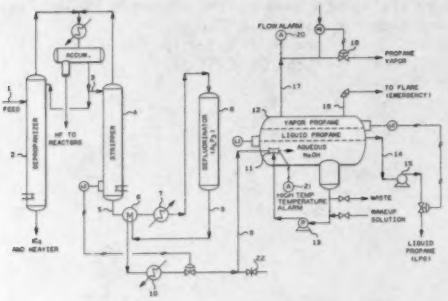
Filed Jan. 10, 1978, Ser. No. 868,364

Int. Cl.² C07C *9/14*; C10G *19/02*

U.S. Cl. 585—854 **6 Claims**

1. In the treatment of propane-containing stream resulting from an alkylation operation in which HF catalyst is employed and in which said stream has been subjected to an HF stripping to remove HF therefrom and to a defluorination step to decompose organic fluorides to form HF, the invention which

comprises admixing said stream with a small portion of an aqueous alkaline treating agent in a mixing section to neutralize



HF, said section being at a locus within a relatively large body of said treating agent.

4,162,274

CROSSLINKABLE URETHANE RESINS CONTAINING VINYL AND CARBOXYL GROUPS

Hans J. Rosenkranz, Krefeld, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 10, 1976, Ser. No. 749,454

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1975, 2557408

Int. Cl.[2] C08L *63/10*

U.S. Cl. 528—75 **6 Claims**

1. A product produced by the steps of reacting (a) a polyepoxide having more than one 1,2-epoxide group per molecule with at least one unsaturated acid selected from the group consisting of acrylic acid and methacrylic acid until 60 to 100 mol% of the 1,2-epoxide groups are converted into β-hydroxy acrylic or methacrylic acid ester groups, (b) reacting 30 to 90 mol% of the hydroxy groups of said β-hydroxy ester groups with an isocyanate to form urethane groups and (c) reacting 10 to 70 mol% of the hydroxy groups of said β-hydroxy ester groups with a cyclic dicarboxylic acid anhydride to form acid semiester groups.

4,162,275

FLAME-RESISTANT FIBER

Gordon M. Moulds, Waynesboro, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 383,038, Jul. 26, 1973, abandoned. This application Jun. 17, 1977, Ser. No. 807,736

Int. Cl.[2] C08L *61/10, 61/28, 77/10;* **D01F** *11/08*

U.S. Cl. 525—428 **6 Claims**

1. A fiber comprising poly(metaphenylene isophthalamide) containing distributed substantially throughout its whole interior finely divided deposits comprised of a tetrakis hydroxymethyl phosphonium compound cross-linked to a reactive resin selected from the group of melamine formaldehyde condensates and phenol formaldehyde condensates in an amount sufficient to provide at least 0.4% by weight phosphorus, based on the total weight of fiber, the phosphonium compound and the reactive resin having been absorbed into water-swollen, never dried poly(methaphenylene isophthalamide) fibers before cross-linking.

4,162,276

NONBURNING, NON-DRIPPING POLYURETHANE COMPOSITIONS

Yong S. Rim, Woodbridge, and Walter Nudenberg, Newtown, both of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Filed May 1, 1978, Ser. No. 901,874

Int. Cl.[2] C08K *5/34, 5/53;* **C08L** *75/04*

U.S. Cl. 525—2 **14 Claims**

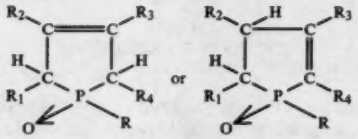
1. A flame-retarded non-drip polyurethane composition comprising:

(a) a polyurethane elastoplastic polymer;

(b) about 3 to about 25 parts by weight per 100 parts by weight of polymer of a hexaalkoxymethylmelamine;

(c) about 5 to about 25 parts by weight per 100 parts by weight of polymer of (1) a non-polymeric organic halogen compound wherein the compound is selected from the group consisting of chlorine and/or bromine containing aliphatic, aromatic and alicyclic compounds having a halogen content of about 35% to about 80% by weight said compound being substantially non-volatile and non-reactive toward the polyurethane polymer or (2) a polymer selected from the group consisting of polyvinylchloride, neoprene and chlorinated polyethylene; and

(d) about 3 parts to about 20 parts by weight per 100 parts by weight of polyurethane polymer of a P-substituted phosphacyclopentene-1-oxide having the general formula:



wherein R is C_1-C_4 alkyl, phenyl or phenyl substituted with bromine or chlorine and R_1, R_2 R_3 and R_4 are independently selected from the group consisting of hydrogen, C_1 to C_4 alkyl, phenyl, chlorine or bromine.

4,162,277

THERMOPLASTIC RESINS WITH POLYINDENE OR COUMARONE-INDENE RESIN

George S. Li, Aurora, and Irving Rosen, Warrensville Heights, both of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 816,245, Jul. 18, 1977, Pat. No. 4,117,040, which is a continuation of Ser. No. 644,122, Dec. 24, 1975, Pat. No. 4,066,717. This application May 24, 1978, Ser. No. 909,323

Int. Cl.[2] C08L *69/00*

U.S. Cl. 525—146 **1 Claim**

1. A composition having improved physical properties comprising a blend of (A) 100 parts by weight of a commercially available thermoplastic synthetic resin and (B) from 1 to 50 parts by weight of a member selected from the group consisting of polyindene and a coumarone-indene resin.

4,162,278

FLAME RETARDANT POLYPHENYLENE ETHER RESIN COMPOSITIONS CONTAINING A PENTAERYTHRITYL PHOSPHONATE

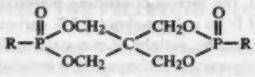
Albrecht H. Granzow, Franklin Township, Somerset County, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 28, 1978, Ser. No. 900,827

Int. Cl.[2] C08L *51/00, 53/00*

U.S. Cl. 525—2 **9 Claims**

1. A flame retardant polyphenylene ether resin/rubber-modified, high-impact polystyrene thermoplastic composition comprising an effective flame retarding amount of a pentaerythrityl phosphonate compound represented by the formula:



wherein R is methyl, phenyl, benzyl, or mono-, di- or trimethylbenzyl.

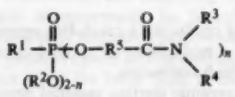
4,162,279

PHOSPHONOXYCARBOXAMIDES

Edward N. Walsh, New City, and Ralph B. Fearing, Bardonia, both of N.Y., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 28, 1977, Ser. No. 837,072
Int. Cl.[2] C07F *9/11, 9/40*
U.S. Cl. 260—943 **6 Claims**

1. A compound of the formula



wherein R^1 and R^2 are selected from the group consisting of aryl and alkyl having from 1–6 carbon atoms and may be the same or different; R^3 represents hydrogen or $—CH_2OH$; R^4 represents hydrogen, $—CH_3$, $—CH_2OH$, or $—C_2H_4OH$, R^5 represents $—CH_2—$, and n represents 1 or 2.

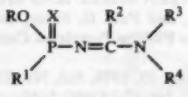
4,162,280

PREPARATION OF PHOSPHORYLATED AMIDINES

Eckart Kranz, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 17, 1978, Ser. No. 887,899
Claims priority, application Fed. Rep. of Germany, Apr. 9, 1977, 2715933
Int. Cl.[2] C07F *9/24*
U.S. Cl. 260—968 **9 Claims**

1. A process for the preparation of a phosphorylated amidine of the formula



in which

R is alkyl or aryl,

R^1 is alkyl, alkoxy, alkylthio, alkenylthio, aralkylthio, mono- or di-alkylamino, dialkenylamino, halogenoalkoxy or phenyl,

R^2 is hydrogen, alkyl or aryl,

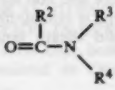
R^3 and R^4 each independently is alkyl or alkenyl or

R^3 and R^4, with the nitrogen atom to which they are attached, form a heterocyclic ring which can optionally be interrupted by a further hetero-atom, and

X is oxygen or sulphur,

which comprises reacting a phosphoric acid ester-amide of the formula

with a carboxamide of the formula



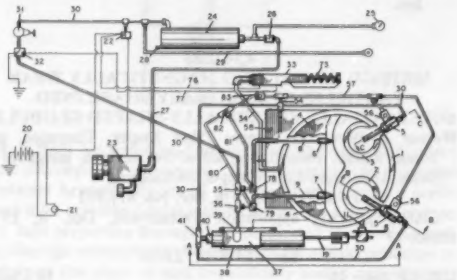
at a temperature between about 0° and 50° C. in the presence of a member selected from the group consisting of dimethyl sulphate, diethyl sulphate, thionyl chloride, phosgene, phosphorus oxytrichloride, phosphorus oxytribromide, phosphorus pentachloride, zinc chloride, acetic anhydride and a formylation Vilsmeier's aldehyde synthesis catalyst, and then reacting the mixture with a base.

4,162,281

CARBURETOR FUEL ATOMIZATION APPARATUS

Robert E. Ingraham, 13 Hampstead Rd. Box 696, South Danville, N.H. 03881

Continuation-in-part of Ser. No. 783,001, Mar. 30, 1977, abandoned. This application Feb. 21, 1978, Ser. No. 879,474
Int. Cl.[2] F02M *69/08*
U.S. Cl. 261—30 **5 Claims**



1. In a carburetor fuel atomization apparatus including a compressed air tank, an electric air regulator control switch, a manually operated air regulator valve, a solenoid controlled flow valve, two tee connections, a cylinder, an air pipe means connecting all of the units above recited to the air pipe in sequence, idler jets means connecting idler jets to the two tees, air control piston means in said cylinder, an inlet connection on said cylinder, a piston rod, a lever plate linkage means connecting said piston rod to a lever plate, a throttle plate, pivot means connecting the throttle plate to the lever plate, an eccelerator pedal, a link connecting the accelerator pedal to the lever plate, an outlet connection on the cylinder, a outlet air pipe, means connecting the outlet connection of the cylinder to the outlet air pipe, a tee on the end of the outlet pipe, means connecting the opposite end of the tee to atomizer air pipes, said atomizer air pipes extending to atomizer nozzles and means adjustably connecting said atomizer air pipes to said nozzles.

4,162,282

METHOD FOR PRODUCING UNIFORM PARTICLES

Mack J. Fulwyler, and C. William Hatcher, both of Los Alamos, N. Mex., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Apr. 22, 1976, Ser. No. 679,241
Int. Cl.[2] B29C *23/00;* G21C *21/00, 19/44;* B01J *13/00;* C09K *3/00*
U.S. Cl. 264—9 **7 Claims**

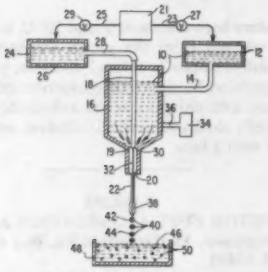
1. A method for producing uniformly sized particles from dispersed material in at least one of a core and sheath liquids said method comprising the steps of:

dispersing at least one particle forming material into at least one of said core and said sheath liquids;

introducing said core liquid into a moving body of at least one sheath liquid;

forming a liquid jet of said core liquid and said sheath liquid;

periodically disturbing said liquid jet to separate said liquid jet including said core and said sheath liquids into unconnected uniform droplets containing a uniform amount of said core liquid, said sheath liquid and said disbursed material;



applying like-repelling charges to each of said uniform droplets; and

forming uniformly sized particles from said uniform droplets.

4,162,283

METHOD OF MELTING MAGNETICALLY WEAK PARTICLES OF ARBITRARY SHAPE INTO SUBSTANTIALLY SPHERICALLY-SHAPED GLOBULES

Werner J. Borer, Flurlingen; Tibor Kugler, Thayngen, and Tomas Zuzak, Feuerthalen, all of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Jan. 24, 1978, Ser. No. 871,951

Claims priority, application Switzerland, Dec. 8, 1977, 15045/77

Int. Cl.[2] B29C *23/00*

U.S. Cl. 264—15 **10 Claims**

1. A method for re-shaping relatively magnetically weak ferrite particles of arbitrary shapes so as to form substantially spherically-shaped globules comprising:

(A) transporting said particles by means of a first carrier gas stream within a conduit;

(B) separating said particles in said first carrier gas stream from said first carrier gas stream;

(C) feeding said separated particles into a second warm gas stream having a relatively hot region and a relatively cool region;

(D) melting said particles in said relatively hot region of said warm gas stream;

(E) passing said melted particles to said cool region of said warm gas stream wherein said particles solidify into substantially spherically-shaped globules; and

(F) discharging said solidified globules from said second warm gas stream.

4,162,284

METHOD OF PRODUCING MECHANICALLY STRONG PELLETS FROM NON-OXIDIZABLE METAL OXIDES

Erik Q. Dahl, Vagsbygd, Norway, assignor to Elkem-Spigerverket A/S, Oslo, Norway

Continuation of Ser. No. 610,135, Sep. 4, 1975, abandoned, which is a continuation-in-part of Ser. No. 453,319, Mar. 21, 1974, abandoned. This application Mar. 9, 1977, Ser. No. 775,696

Int. Cl.[2] C04B *35/64*

U.S. Cl. 264—66 **5 Claims**

1. A process for the preparation of pellets from non-oxidizable metal oxides consumably utilizable in smelting processes from non-oxidizable metal oxides which pellets are for introduction into a smelting furnace during its operation comprising forming pellets from a composition consisting essentially of one or more non-oxidizable metal oxides consumably utilizable in smelting processes admixed with water and a carbon-containing material, the carbon-containing material being present in an amount of from at least about 0.5% carbon by weight to about 2.5% carbon by weight of non-oxidizable metal oxide, whereby the temperature of the pellets is maintained below the level at which undesirable sintering together of the pellets into lumps may result and thereafter sintering the pellets in a shaft furnace at a maximum shaft furnace temperature of approximately 1400° C. by supplying heat thereto and wherein the carbon-containing material supplies at least part of the heat for the sintering.

4,162,285

METHOD FOR PRODUCING A CERAMIC HONEYCOMB STRUCTURE HAVING NO CRACKS

Isao Tanabashi, Nagoya, Japan, assignor to NGK Insulators, Ltd., Nagoya, Japan

Filed Jun. 6, 1977, Ser. No. 804,160

Claims priority, application Japan, Jun. 10, 1976, 51-67058

Int. Cl.[2] C04B *33/32*

U.S. Cl. 264—66 **7 Claims**

1. A method of producing a crack-free ceramic honeycomb structure having a multiplicity of parallel channels extending therethrough, which comprises;

compounding ceramic starting material powders,

adding a composition of water and a polyhydric alcohol in a mixture ratio by weight of 85:15-5:95 to the ceramic powders and kneading the resulting mixture,

shaping the mixture into a honeycomb structure by extrusion,

drying the shaped honeycomb structure at a temperature which evaporates water but does not evaporate the polyhydric alcohol to evaporate water by passing air through the channels of the honeycomb structure, wherein the polyhydric alcohol adjusts the humidity to achieve uniform drying and to alleviate cracking in the drying of the honeycomb structure,

heating the honeycomb structure at a temperature which evaporates the polyhydric alcohol to evaporate the polyhydric alcohol, and then

firing the honeycomb structure.

4,162,286

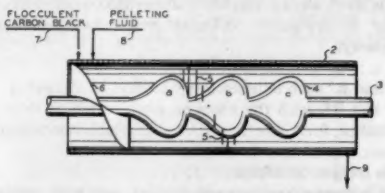
WET PELLETER HAVING VARIABLE ANNULUS BETWEEN SHELL AND SHAFT

Thomas J. Gunnell, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1978, Ser. No. 870,681

Int. Cl.[2] C09C *1/56*

U.S. Cl. 264—117 **14 Claims**



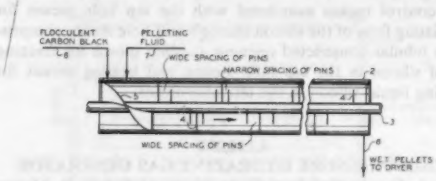
1. A method for pelleting a mass of particles in a pelleting zone, as with a pelleting fluid to compact and to densify the same in said zone, which comprises in said zone passing said particles and fluid through alternate zones of changing cross-sectional area formed in said zone, thereby subjecting said particles to a series of alternating compressions and decompressions.

4,162,287

APPARATUS FOR PELLETING FLOCCULENT PARTICLES

Thomas J. Gunnell, and Paul D. Hann, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 23, 1978, Ser. No. 870,682
Int. Cl.[2] C09C 1/56
U.S. Cl. 264—117 3 Claims



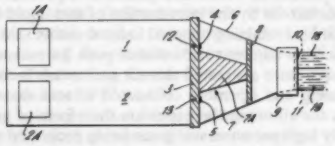
1. A method for pelleting a mass of particles, e.g., flocculent carbon black, which comprises subjecting said particles to a compression and decompression by passing said particles through a pelleting zone wherein a helix of tines is arranged to have a variable pitch, the pitch having alternate decreasing and increasing values along the helix, thus, to effect compression and expansion action on the mass in the pelleter.

4,162,288

MANUFACTURE OF MARBLED DETERGENT BARS

Leslie Hunt, Wirral; Ian T. Nicolson, Birkenhead, and Thomas M. Whitfield, Wirral, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 21, 1977, Ser. No. 779,774
Claims priority, application United Kingdom, Mar. 26, 1976, 12242/76
Int. Cl.[2] B29F 3/12
U.S. Cl. 264—75 8 Claims



1. A method of injecting a fluid into a detergent mass of a different color to form a product of generally striped or marbled appearance, said method comprising the steps of:

(a) extruding a detergent mass as two portions each through a respective multi-apertured section of an apertured plate simultaneously into a common extrusion cone;

(b) injecting fluid of a different color into each of said mass portions concomitantly as said mass portions begin to enter said extrusion cone; and

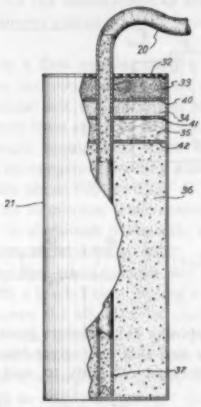
(c) advancing said mass portions impregnated with said different colored fluid under extrusion pressure in spaced relation with one another along opposite side surfaces of a partition disposed in said extrusion cone, said opposite side surfaces each being partially conical and cooperating with the interior of said extrusion cone to present two separate chambers through which said fluid-impregnated mass portions are separately extruded respectively.

4,162,289

FILTER UNIT FOR AVOIDING ENVIRONMENTAL POLLUTION IN CEMETERIES

Carlos R. Gomez, and Horst Eller, both of Mexico City, Mexico, assignors to Internacional de Ciencia y Tecnologia, S.A., Mexico City, Mexico

Filed Feb. 25, 1977, Ser. No. 772,046
Int. Cl.[2] B01J 8/04; E04H 13/00; B01D 53/04
U.S. Cl. 422—170 4 Claims



1. A filter for removing harmful gases and unpleasant odors from decomposing corpses, said filter comprising an elongated container hermetically sealed at one end and having a perforated inlet extending substantially across the opposite end, an exit duct projecting through said perforated inlet and extending through substantially the entire length of said container to terminate just short of said hermetically sealed end whereby gases entering the container through said perforated inlet end pass through substantially the entire container length before entering the exit duct for passage in the reverse direction for venting to atmosphere, first separator means located within said container and extending around said exit duct and diametrically across said container substantially to isolate a first compartment within said container proximate said perforated inlet end containing inert and porous material to filter large particles and retain the contents of the container in position, second separator means located downstream of the first separator means in the gas flow direction substantially to isolate a second compartment containing oxalic acid to remove amines from the gas flow, third separator means located downstream of the second separator means in the gas flow direction substantially to isolate a third compartment containing a metallic salt selected from the group consisting of copper sulphate, mercuric chloride and lead acetate to remove sulfur components from the gas flow and activated charcoal disposed between said third separator means and said hermetically sealed end of the container to envelop the entrance end of the exit duct and remove remaining unpleasant odorous gases.

4,162,290

PARALLEL STEAM REFORMERS TO PROVIDE LOW ENERGY PROCESS

Duffer B. Crawford; Colman L. Becker, and Joseph R. LeBlanc, all of Houston, Tex., assignors to Pullman Incorporated, Chicago, Ill.

Division of Ser. No. 743,426, Nov. 19, 1976, Pat. No. 4,079,017. This application Dec. 29, 1977, Ser. No. 865,559
Int. Cl.[2] B01J 8/04, 8/06
U.S. Cl. 422—190 4 Claims

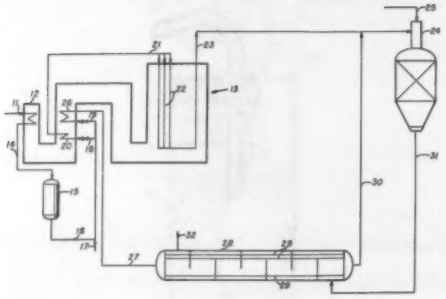
1. A system for the steam reforming of hydrocarbons which comprises:

(1) in parallel

(a) a steam reforming furnace having a radiant section, reforming tubes in said radiant section, and means for producing radiant heat, for primary reforming a first mixture of hydrocarbon feed and steam;

(b) an exchanger-reactor having indirect heat exchange means for primary reforming a second mixture of hydrocarbon feed and steam passing therethrough;

(2) a secondary reformer;



(3) means for combining the effluents from said steam reforming furnace and said exchanger-reactor, and introducing said combined effluents to said secondary reformer; and

(4) means for passing the effluent from said secondary reformer to said exchanger-reactor to supply the heat for the primary reforming of said mixture of hydrocarbon feed and steam passing therethrough.

4,162,291

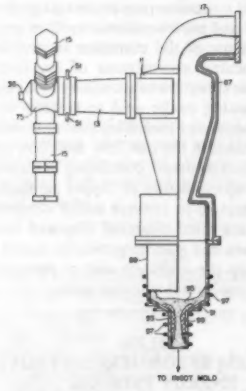
LIQUID SILICON CASTING CONTROL MECHANISM

Frank G. Arcella, Bethel Park; Charles B. Wolf, Irwin, and Maurice G. Fey, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 12, 1977, Ser. No. 841,409

Int. Cl.[2] B01D *57/00;* **B01J** *10/00;* **C25B** *1/02;* **C22B** *4/02*

U.S. Cl. 422—198 **6 Claims**



1. A liquid silicon casting mechanism comprising an arc heater having spaced cylindrical electrodes forming an arc chamber, means connected to and external of the chamber for forming an electric arc in the space between the electrodes, means connected to and external of the electrodes for injecting gas into the arc chamber through the space to form an arc stream that extends into and downstream of the chamber, means associated with the arc heater for feeding into the arc stream a quantity of a reductant, a plenum chamber connected to and communicating with the arc chamber to combine the reductant and the arc stream, means downstream of the arc chamber for introducing a silicon compound into the arc stream in said plenum chamber, a reaction chamber downstream of the plenum chamber for producing a mixture of liquid elemental silicon and a salt of the reductant, means downstream of the reaction chamber for separating the liquid silicon and the salt, a collecting receptable for the liquid silicon having tap hole means for draining liquid silicon therefrom, and control means associated with the tap hole means for regulating flow of the silicon through said hole means comprising a tubular constricted opening, cooling means for freezing liquid silicon in the tap hole means, and heating means for melting liquid silicon in the tap hole means.

4,162,292

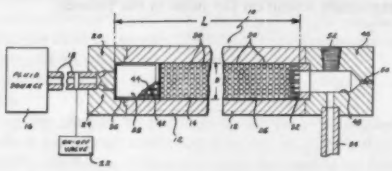
HIGH PRESSURE HYDRAZINE GAS GENERATOR

John A. Speeds, San Jose, Costa Rica, and Robert D. Marcy, Chatsworth, Calif., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Oct. 20, 1977, Ser. No. 844,082

Int. Cl.[2] B01J *7/02;* **F02C** *3/24;* **F02K** *7/08*

U.S. Cl. 422—206 **9 Claims**



1. A high pressure hydrazine thermal bed gas generator comprising a housing, a decomposition chamber situated within said housing, means for introducing liquid hydrazine into said decomposition chamber, a removable initiator pack located within said decomposition chamber, said initiator pack comprising a container having a rupturable vapor barrier constituting at least part of one wall thereof and containing therein material capable of chemically reacting with said liquid hydrazine and producing a high temperature as a result thereof and heat retaining material positioned within said container and adjacent said chemically reacting material, said container being so positioned within said chamber to provide rupture of said vapor barrier by the introduction of said liquid hydrazine, additional heat retaining material located within said decomposition chamber adjacent said initiator pack for maintaining said high temperature generated therein and means located within said housing and operably connected to said decomposition chamber for allowing the expulsion therefrom of gases under extremely high pressure, said gases being generated within said chamber as a result of the decomposition of said liquid hydrazine.

4,162,293

APPARATUS FOR PREPARATION OF A COMPOUND OR AN ALLOY

Klaus Zeuch, Eckental, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 559,015, Mar. 17, 1975, abandoned.

This application Dec. 27, 1976, Ser. No. 754,518

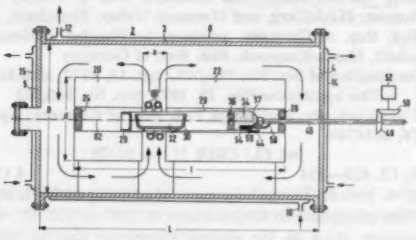
Claims priority, application Fed. Rep. of Germany, Mar. 27, 1974, 2414827

Int. Cl.[2] B01J *17/26*

U.S. Cl. 422—247 **8 Claims**

1. In apparatus for the preparation of a compound or an alloy having one component with a substantially higher vapor pressure than the other using a closed horizontal reaction ampule having its ends disposed in and surrounded by first and second

hollow cylindrical heating ovens with the reaction ampule and ovens arranged within an enclosed pressurized vessel at a pressure in the range of 6 to 35 bar, the ovens being arranged one behind the other in the direction of the axis of the ampule at a predetermined distance from each other, and inductive heating means for heating material disposed within the ampule in a narrow zone in the middle portion between the ovens to a



temperature of about 1500° C. whereby heat is radiated inside the ampule and heats the wall of the ampule at said middle portion, the improvement comprising the ampule having its ends supported within the respective heating ovens and its middle portion between the heating ovens supported only by the rigidity of the ampule itself, and means for intensely cooling the wall of the ampule at said middle portion by convection within said pressurized vessel.

4,162,294

PROCESS FOR WORKING UP NONFERROUS METAL HYDROXIDE SLUDGE WASTE

Lothar Witzke, Brühl, and Wolfgang Müller, Mannheim-Rheinau, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Sep. 26, 1978, Ser. No. 945,846

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1977, 2743812

Int. Cl.² C01G *3/10, 37/14, 9/00, 53/10*

U.S. Cl. 423—24 **6 Claims**

1. A process for treating nonferrous metal hydroxide sludge waste which contains chromium, aluminum, copper, zinc, and nickel as nonferrous metals and recovering and separating the nonferrous metals by the consecutive steps of:

(a) mixing an alkali hydroxide or alkali carbonate with the nonferrous metal sludge waste in at least stoichiometric amounts, based on the chromium content of the waste sludge, drying the mixture at temperatures of less than 200° C. and roasting the dried mass in a current of air at temperatures of 400° to 800° C. for 0.5 to 3 hours, subsequently adding the hot roasted material to water, separating off the alkali chromate formed and washing the water-insoluble residue;

(b) treating the residue from step (a) with 10 to 20 weight percent of sulfuric acid at pH values not greater than 2 and at temperatures of 50° to 100° C. for 0.5 to 5 hours, and separating off the acid-insoluble residue from the sulfuric acid solution obtained;

(c) separating the copper from this solution by liquid-liquid extraction and working up the copper-free solution by:

(1) precipitating and separating the remaining aluminum and chromium(III) portions at pH values of 4 to 6 as hydroxides or basic sulfates and then

(2) separating the zinc from the remaining solution by liquid-liquid extraction; and

(3) separating the nickel from the remaining solution by liquid-liquid extraction;

and working up the individual nonferrous metal fractions obtained from steps (c), and (c1), (c2), and (c3) by conventional procedures.

4,162,295

METHOD FOR PRODUCTION OF ALKALI METAL CHROMATES FROM CHROME ORES

Somanahalli N. Subbanna, Camillus; Thomas R. Morgan, Solvay, and Douglas G. Frick, La Fayette, all of N.Y., assignors to Allied Chemical Corporation, Morristown, N.J.

Filed Nov. 14, 1977, Ser. No. 851,230

Int. Cl.² C01G *37/14*

U.S. Cl. 423—61 **14 Claims**

1. A method for the manufacture of alkali metal chromates having a low alumina content, which comprises the following steps:

(a) reacting in a first roasting step a mixture comprising chrome ore, recycled residue from a prior roasting step and alkali metal salt, the amount of alkali metal salt being in the range of from about 35 to 80 percent of the stoichiometric amount required to react with chrome in said mixture, in an oxygen-containing atmosphere at a temperature of from about 900° to 1200° C. for a time period of at least about 30 minutes while maintaining a Bichromate Equivalent to aluminum oxide ratio in said mixture in the range of from about 3.0:1 to 10:1;

(b) cooling the first roast mixture and leaching said cooled mixture with a leach liquor having a pH between 4.5 and 12.0 to remove the alkali metal chromate values and to form a first roast mix residue;

(c) recycling at least a portion of said residue to step (a);

(d) reacting in a second roasting step the remainder of said residue with an additional amount of alkali metal salt, the amount being about 30 to 60 percent of the stoichiometric amount of alkali metal salt required to react with the chrome in said residue, in an oxygen-containing atmosphere at a temperature of from about 900° to 1200° C. for a time period of at least about 45 minutes while maintaining a Bichromate Equivalent to aluminum oxide ratio in the second reaction mixture in the range of from about 1.5:1 to 4:1;

(e) cooling the resulting second roast mixture and leaching said cooled mixture with a leach liquor having a pH between 4.5 and 12.0 to remove said alkali metal chromate values; and

(f) recovering alkali metal chromate values removed in steps (b) and (e).

4,162,296

LIQUID-LIQUID EXTRACTION OF NICKEL

Wolfgang Müller, Mannheim; Lothar Witzke, Brühl, and Werner Gottfried, Altlussheim, all of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jan. 25, 1978, Ser. No. 872,101

Claims priority, application Fed. Rep. of Germany, Feb. 2, 1977, 2704181

Int. Cl.² C01G *51/00*

U.S. Cl. 423—139 **6 Claims**

1. In a method for the liquid-liquid extraction of nickel from aqueous solutions thereof which contain alkali metal ions wherein the aqueous solution is contacted with an organic phase containing an extraction agent, the improvement which comprises the organic phase containing from about 1 to 10 parts by volume of di-2-ethylhexyl phosphoric acid and from about 3 to 30 parts by volume of napthenic acid, and wherein extraction is carried out by contacting up to four separate volumes of the aqueous solution sequentially with the same organic phase and then stripping the nickel-charged organic phase to produce a nickel containing eluate, and wherein separate extractions are each carried out at a pH in the range from about 6 to 7.5 for a period of less than five minutes each.

4,162,297

RECOVERY OF MAGNESIUM CHLORIDE FROM BRINES

André Aubry, Mulhouse, and Michel Bichara, Pfastatt-Richwiller, both of France, assignors to Mines de Potasse d'Alsace S.A., Mulhouse, France

Filed Nov. 23, 1977, Ser. No. 854,445
Claims priority, application France, Nov. 25, 1976, 76 35461
Int. Cl.[2] C01F *5/30*
U.S. Cl. 423—158 14 Claims

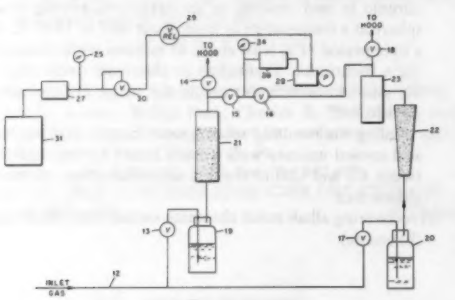
1. A method of separating magnesium chloride from an aqueous brine consisting essentially of water as the solvent having dissolved therein a mixture of metallic chlorides of which magnesium chloride is present in major quantities, and alkali metal chlorides are present in substantial quantities which process comprises adding dioxane to said aqueous brine, thereby forming a magnesium chloride-containing precipitate separating the precipitate from the aqueous brine and then separating the dioxane contained in the precipitate from the precipitate to recover solid magnesium chloride hydrate.

4,162,298

METHOD OF IMMOBILIZING CARBON DIOXIDE FROM GAS STREAMS

David W. Holladay, Knoxville, and Gary L. Haag, Oliver Springs, both of Tenn., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 9, 1978, Ser. No. 932,152
Int. Cl.[2] B01D *53/34*
U.S. Cl. 423—230 10 Claims



6. In the operation of an industrial facility which generates an off-gas stream containing carbon dioxide, the method of removing said carbon dioxide comprising:

(a) providing a bed of particulate barium hydroxide monohydrate,

(b) directing said stream through said bed while continuously introducing water vapor to said bed in an amount corresponding to from 10 to 100% of the saturation-value for said stream to effect conversion of said bed to barium carbonate, and

(c) continuously withdrawing the resulting carbon-dioxide-depleted stream from said bed.

4,162,299

PROCESS FOR THE REMOVAL OF SULFUR OXIDES

Tetsu Takeyama, Kyoto; Akio Takahashi; Kiichiro Matsumura, both of Otsu, and Keiya Kitagawa, Minoo, all of Japan, assignors to Toray Engineering Co., Ltd., Osaka, Japan

Filed Jan. 4, 1978, Ser. No. 866,855
Int. Cl.[2] C01B *17/00*
U.S. Cl. 423—242 4 Claims

1. A process for removing sulfur oxides from a waste gas containing said sulfur oxides, comprising contacting said gas with an aqueous scrubbing solution containing aluminate and at least one additional compound selected from the group consisting of aluminum sulfate and alum and having a pH of from 2 to 4.5, the concentration of said additional compound in the scrubbing solution being within the range of from 1 to 30% by weight.

4,162,300

PRODUCTION OF MADDRELL SALT

Renate Adrian; Raban von Schenck, both of Hurth; Klaus Somme, Heidelberg, and Hermann Weber, Hemsbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Hurth-Knapsack, Fed. Rep. of Germany

Continuation of Ser. No. 786,372, Apr. 11, 1977, abandoned.
This application Sep. 25, 1978, Ser. No. 945,502
Claims priority, application Fed. Rep. of Germany, Apr. 15, 1976, 2616740
Int. Cl.[2] C01B *15/16, 25/26*
U.S. Cl. 423—314 4 Claims

1. A process for making pure Maddrell salt by heating a sodium phosphate to temperatures of 250° to 420° C., which comprises using as the sodium phosphate starting material sodium trimetaphosphate, admixing the starting material, prior to heating it, with 0.5 to 5 weight % of orthophosphoric acid, polyphosphoric acid, phosphorus pentoxide or at least one salt of a volatile base forming polyphosphoric acid at the temperatures specified, and calcining the resulting mixture over the period necessary to transform the starting material to Maddrell salt.

4,162,301

FLEXIBLE MICROCRYSTALLINE ZIRCONIUM CARBIDE FABRIC

Bernard H. Hamling, Warwick, N.Y., assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 737,842, Jun. 18, 1968, abandoned, which is a continuation-in-part of Ser. No. 602,571, Dec. 19, 1966, Pat. No. 3,403,008, which is a continuation-in-part of Ser. No. 522,380, Jan. 24, 1966, abandoned. This application Oct. 16, 1973, Ser. No. 406,887
Int. Cl.[2] C01B *31/34*
U.S. Cl. 423—440 1 Claim

1. A flexible microcrystalline zirconium carbide fabric which can be folded upon itself without creasing or breaking, the individual fibers of which have:

(a) a tensile strength greater than 100,000 pounds per square inch,

(b) a crystal grain size of less than two tenths of a fiber diameter,

said zirconium carbide having a melting point of at least about 3300° F.

4,162,302

DECOMPOSITION OF WATER

Chikara Hirayama, Franklin Borough, Pa., and Lee E. Brecher, Lexington, Ky., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 16, 1978, Ser. No. 906,498
Int. Cl.[2] C01B *1/02, 13/02*
U.S. Cl. 423—579 19 Claims

1. A process for decomposing water into hydrogen and oxygen comprising

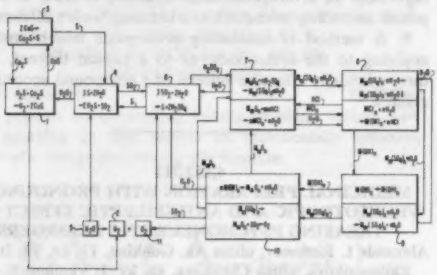
(1) reacting hydrogen sulfide with cuprous sulfide to produce said hydrogen and cupric sulfide according to the equation $H_2S+Cu_2S \rightarrow H_2+2CuS$;

(2) decomposing said cupric sulfide to produce said cuprous sulfide and sulfur according to the equation $2CuS \rightarrow Cu_2S+S$;

(3) reacting said sulfur with water to produce said hydrogen sulfide and sulfur dioxide according to the equation $3S+2H_2O \rightarrow 2H_2S+SO_2$;

(4) reacting said sulfur dioxide with water to produce sulfur

and sulfuric acid according to the equation $3SO_2+2H_2O \rightarrow S+2H_2SO_4$; and



(5) decomposing said sulfuric acid to produce said sulfur dioxide, water, and said oxygen according to the equation $2H_2SO_4 \rightarrow 2SO_2+O_2+2H_2O$.

4,162,303

POTENCY AND ATOXICITY TEST FOR MODIFIED NEUROTOXIN

Murray J. Sanders, 3009 Spanish Trail Rd., Delray Beach, Fla. 33444

Filed Jun. 17, 1977, Ser. No. 807,654
Int. Cl.[2] A61K *29/00, 35/58;* C12K *9/00*
U.S. Cl. 424—9 **16 Claims**

1. A test method for determining the absence or presence of toxins in and the potency of modified neurotoxins comprising:

(a) providing on a growth substrate a thin sheet of viable cells which exhibit an uninhibited growth potential of at least 10^6 Plaque Forming Units of Semliki Forest Virus under the test conditions, the cells being harvested from the kidney cells of an embryo, fetus or baby specimen of a fowl or animal,

(b) treating the thin cell sheet with test modified neurotoxin and incubating the treated cell sheet for at least ½ hour;

(c) examing the incubated cell sheet for cell destruction, wherein the absence of cell destruction shows the absence of toxins in the modified neurotoxin and the presence of cell destruction shows the presence of toxins in the modified neurotoxin;

(d) inoculating the treated cell sheet with Semliki Forest Virus; and

(e) counting the number of viral plaques in the remaining culture, whereby the potency of the modified neurotoxin is determined by the percent reduction in viral plaques produced by the use of the modified neurotoxin in the culture.

4,162,304

STREPTOMYCETAL ANTIBIOTIC

Stephen J. Box, Horsham, and John D. Hood, Cranleigh, both of England, assignors to Beecham Group Limited, Great Britain dom

Continuation-in-part of Ser. No. 716,953, Aug. 23, 1976, abandoned, which is a division of Ser. No. 664,917, Mar. 8, 1976, abandoned. This application Sep. 22, 1976, Ser. No. 725,677
Claims priority, application United Kingdom, Mar. 15, 1975, 10914/75
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—117 **20 Claims**

11. A method of treating bacterial infections in humans and animals which comprises administering to a human or animal in need thereof an antibacterially effective amount of a pharmaceutical composition which comprises an antibacterially effective amount of a pharmaceutically acceptable di-basic salt of MM 17880 which is at least 75% pure formula MM 17880 is a diacidic solid of the molecular weight $C_{11\text{-}14}H_{18\text{-}25}O_{8\text{-}11}N_2S_2$ which in the form of a substantially pure di-sodium salt has the following characteristics:

(a) when present at 0.4% w/w in a freshly prepared KBr disc, it has a characteristic infrared spectrum substantially as shown in FIG. 1;

(b) it has a characteristic nuclear magnetic resonance spectrum which when taken in deuterium oxide is substantially as shown in FIG. 2;

(c) it has a characteristic ultra-violet spectrum which in water has an absorption maximum at about 297 n.m. substantially as shown in FIG. 3;

(d) it possesses antibacterial activity against certain gram-positive and gram-negative organisms, including strains of *Bacillus subtilis, Enterobacter cloacae, Escherichia coli, Klebsiella aerogenes, Proteus mirabilis, Salmonella typhimurium, Serratia marcescens* and *Staphylococcus aureus;* and

(e) when mixed with ampicillin or amoxycillin, it synergizes their antibacterial activity against certain bacteria, including strains of Staphylococcus aureus and Klebsiella aerogenes,

in combination with a pharmaceutically acceptable carrier.

4,162,305

ANTIBIOTIC XK-99 AND PROCESS FOR PRODUCTION THEREOF

Takashi Nara, Tokyo; Ryo Okachi, Machida; Isao Kawamoto, Hiratsuka; Tomoyasu Sato, and Tetsuo Oka, both of Machida, all of Japan, assignors to Abbott Laboratories, North Chicago, Ill.

Filed Mar. 29, 1978, Ser. No. 891,263
Claims priority, application Japan, Mar. 31, 1977, 52-35215
Int. Cl.[2] A61K *35/00*
U.S. Cl. 424—120 **5 Claims**

1. XK-99, an antibacterial composition of matter characterized by:

(a) a molecular weight of 390;

(b) a melting point about 250° C. with decomposition;

(c) Specific Rotation: $\alpha D^{24}=-360°$ (C=0.1 methanol);

(d) ultraviolet absorption spectra essentially as shown in FIG. 1;

(e) infrared absorption spectrum essentially as shown in FIG. 2; and

(f) a found elemental analysis of 58.24% C, 4.57% H and 9.89% N.

4,162,306

MEDICINE FOR TREATING DIARRHEA

Hans-Georg Laves, Gehrden near Hannover, Fed. Rep. of Germany, assignor to Laves-Arzneimittel G.m.b.H. & Co. K.G., Fed. Rep. of Germany

Filed Apr. 7, 1978, Ser. No. 894,423
Claims priority, application Fed. Rep. of Germany, Apr. 6, 1977, 2715384
Int. Cl.[2] A61K *33/44*
U.S. Cl. 424—125 **3 Claims**

1. A medicinal composition suitable for treating diarrhea which comprises 15–30% medicinal carbon, 20–40% Bolus alba, 1–3% pectin, 20–40% sweet whey powder, and 10–20% lactose.

4,162,307

METHOD FOR ANAESTHESIA BY USE OF A PENTAPEPTIDE

Samuel Wilkinson, Beckenham, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Jul. 21, 1978, Ser. No. 926,795
Claims priority, application United Kingdom, Jul. 22, 1977, 30909/77
Int. Cl.[2] A61K *37/00;* C07C *103/52*
U.S. Cl. 424—177 **4 Claims**

1. A method for the induction and/or maintenance of anaesthesia in a mammal, comprising the administration to the mam-

mal of an anaesthetic-effective, non-toxic amount of a peptide of formula

H.Tyr.D-Ala.Gly.Phe.D-Leu.NHEt

or a pharmacologically and pharmaceutically acceptable acid addition salt thereof.

4,162,308

WATER SOLUBLE EXTRACTS OF CERTAIN MARINE RED ALGAE AND PROCESSES FOR USE THEREOF

Natasha I. Calvin, and Robert J. Ellis, both of Box 112, Auke Bay, Ak. 99821

Filed Apr. 10, 1978, Ser. No. 894,831
Int. Cl.[2] A61K *35/78, 31/70*
U.S. Cl. 424—195 **4 Claims**

1. A method of treating and relieving pain of herpetic virus infections in humans comprising the steps of:
intimately contacting the surface region directly infected with said virus with a water soluble extract of a marine red algae selected from the group consisting of *Turnerella mertensiana, Schizymenia epiphytica* and *Turnerella pennyi,* and mixtures thereof.

4,162,309

WATER SOLUBLE EXTRACTS OF CERTAIN MARINE RED ALGAE AND PROCESSES FOR USE THEREOF

Natasha I. Calvin, and Robert J. Ellis, both of Box 112, Auke Bay, Ak. 99821

Filed Apr. 10, 1978, Ser. No. 894,833
Int. Cl.[2] A61K *35/78, 31/70*
U.S. Cl. 424—195 **3 Claims**

1. A method of treating and relieving pain of herpetic virus infections in humans comprising the steps of:
intimately contacting the surface region directly infected with said virus with a water soluble extract of a marine red algae selected from the group consisting of *Neodilsea americana* and *Neodilsea integra* and mixtures thereof.

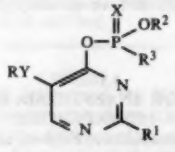
4,162,310

COMBATING ARTHROPODS WITH O-ALKYL-O-[5-SUBSTITUTED-PYRIMIDIN(4)-YL]-(THIONO)(THIOL)-PHOSPHORIC(PHOSPHONIC)ACID ESTERS

Fritz Maurer; Hans-Jochem Riebel; Rolf Schröder, all of Wuppertal; Ingeborg Hammann, Cologne, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 24, 1977, Ser. No. 827,511
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639256
Int. Cl.[2] A01N *9/36;* C07F *9/65*
U.S. Cl. 424—200 **10 Claims**

1. An O-alkyl-O-[5-substituted-pyrimidin (4)yl]-(thiono) (thiol)-phosphoric (phosphonic acid ester of the formula



in which
R and R^2 each independently is alkyl with 1 to 6 carbon atoms,
R^1 is hydrogen or alkyl with 1 to 6 carbon atoms,
R^3 is alkyl with 1 to 4 carbon atoms, alkoxy with 1 to 4 carbons atoms, alkylthio with 1 to 6 carbon atoms, or phenyl, and
X and Y each independently is oxygen or sulphur.

8. An arthropodicidal composition containing as active ingredient an arthropodicidally effective amount of a compound according to claim 1 in admixture with a diluent.

9. A method of combating arthropods which comprises applying to the arthropods, or to a habitat thereof, an arthropodicidally effective amount of a compound according to claim 1.

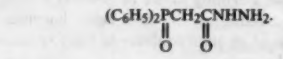
4,162,311

MEDICINAL PREPARATION WITH PRONOUNCED VEGETOTROPIC AND ANTIEPILEPTIC EFFECT FOR TREATING PSYCHONEUROTIC DISORDERS

Alexandr I. Razumov, ulitsa Ak. Gubkina, 17, kv. 34; Irina V. Zaikonnikova, ulitsa Chekhova, 4b, kv. 1; Vladimir S. Chudnovsky, ulitsa Dekabristov, 189, kv. 59; Galina F. Rzhevskaya, ulitsa Stepana Khalturina, 16, kv. 72; Raisa I. Tarasova, ulitsa 8 Marta, 2, kv. 28; Nina A. Bljukherova, ulitsa Ershova, 20, kv. 57; Rimma L. Yafarova, ulitsa Zhdanova, 66, kv. 62, all of Kazan; Grigory Y. Avrutsky, ulitsa 3 Parkovaya, 38, korpus 1 kv. 109, Moscow; Vladimir G. Belikov, ulitsa Krasnoarmeiskaya, 11a, kv. 15, Pyatigorsk, and Anatoly V. Litvinenko, ulitsa Pionerskaya, 14, kv. 37, Kazan, all of U.S.S.R.

Filed Nov. 4, 1977, Ser. No. 848,583
Int. Cl.[2] A61K *31/66*
U.S. Cl. 424—211 **3 Claims**

1. Method of providing a vegetropic and antiepileptic effective a patient requiring the same, which comprises administering to such patient a vegetropic and antiepileptic effective amount of the hydrazide of diphenylphosphinylacetic acid of the formula:



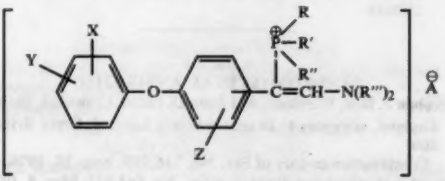
4,162,312

PHENOXYBENZYLPHOSPHONIUM SALTS AND DERIVATIVES THEREOF AND USE AS FUNGICIDES

Michael J. Brown, Randolph Township, Morris County, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,205
Int. Cl.[2] A01N *9/36;* C07C *91/16*
U.S. Cl. 424—211 **11 Claims**

1. The compound having the formula:



wherein $A^{\ominus}$ is a halogen anion; X, Y and Z are each independently hydrogen, a halogen atom or haloalkyl group of from 1 to 4 carbon atoms; R, R′ and R″ are each independently phenyl, halophenyl, haloalkylphenyl of from 7 to 12 carbon atoms or alkyl of from 1 to 6 carbon atoms, optionally substituted with halogen; and each R‴ is independently hydrogen or alkyl of from 1 to 4 carbon atoms, optionally substituted with halogen.

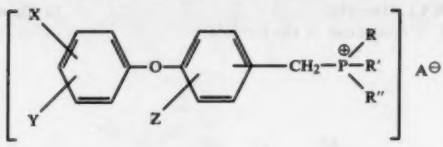
6. The process of controlling fungus infection in plants which comprises treating said fungus infection with a fungicidally effective amount of at least one compound of claim 1.

4,162,313
PHENOXYBENZYLPHOSPHONIUM SALT INSECTICIDES

Michael J. Brown, Randolph Township, Morris County, N.J., assignor to GAF Corporation, New York, N.Y.

Filed Dec. 16, 1977, Ser. No. 861,204
Int. Cl.[2] A01N *9/36*
U.S. Cl. 424—217 15 Claims

1. A process for controlling insects on plants which comprises applying to said insects an insecticidally effective amount of a compound having the formula:



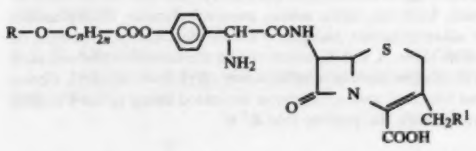
wherein $A^{\ominus}$ is a halogen anion; X, Y and X are each independently hydrogen, a halogen atom or a haloalkyl group of from 1 to 4 carbon atoms; R, R′ and R″ are each independently phenyl, halophenyl, haloalkylphenyl of from 7 to 12 carbon atoms or alkyl of from 1 to 6 carbon atoms, optionally substituted with halogen.

4,162,314
7[2(SUBSTITUTED PHENYL)2-(AMINO)ACETAMIDO]CEPHALOSPORIN DERIVATIVES

Rudolf Gottschlich; Rolf Gericke; Horst Juraszyk; Jürgen Seubert; Wighard Strehlow; Helmut Wahlig; Rolf Bergmann, and Elvira Dingeldein, all of Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Filed Jun. 13, 1977, Ser. No. 806,241
Claims priority, application Fed. Rep. of Germany, Jun. 14, 1976, 2626558; Mar. 19, 1977, 2712225
Int. Cl.[2] A61K *31/545;* C07D *501/22, 501/32*
U.S. Cl. 424—246 5 Claims

1. A compound of the formula



wherein R is alkyl of up to 6 carbon atoms or H; R^1 is hydrogen or acetoxy; and n is 0 or an integer from 1 to 8; or a readily-cleavable ester or a pharmaceutically acceptable salt of the carboxy group thereof; said readily-cleavable ester being a tert-butyl, trimethylsilyl, benzyl, benzhydryl, trichloroethyl, benzylmethyl, p-methoxybenzyl, methoxymethyl or pivaloyloxymethyl ester.

4. A pharmaceutical compositions, comprising an amount per unit dosage effective to produce a systemic antibacterial effect upon administration, of a compound of claim 1, in admixture with a pharmaceutically-acceptable carrier.

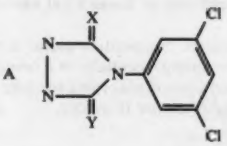
5. A method of treating a patient afflicted with a bacterial infection comprising administering to the affected patient an antibacterial amount of a compound of claim 1.

4,162,315
AGRICULTURAL FUNGICIDAL COMPOSITION

Taichiro Shigematsu; Tetsuya Shibahara; Makoto Nakazawa, all of Yokohama; Masayuki Tomida, Sagamihara, and Toshio Munakata, Tokyo, all of Japan, assignors to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Division of Ser. No. 638,761, Dec. 8, 1975, Pat. No. 4,049,820.
This application Jun. 29, 1977, Ser. No. 810,999
Claims priority, application Japan, Dec. 13, 1974, 49-143183
Int. Cl.[2] A01N *9/22;* C07D *487/04*
U.S. Cl. 424—250 8 Claims

1. A method of killing plant pathogenic fungi which comprises applying to said fungi a fungicidally effective amount of a compound represented by the following formula:



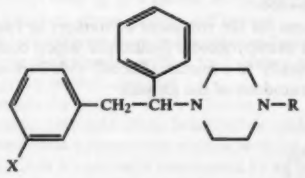
wherein each of X and Y represents oxygen or sulfur, and A represents alkylene having 4 carbon atoms which may have branched methyl.

4,162,316
1-SUBSTITUTED-4-(1,2-DIPHENYLETHYL)PIPERAZINE DERIVATIVES AND COMPOSITIONS CONTAINING THE SAME

Haruki Nishimura, Ikeda; Hitoshi Uno, Takatsuki; Kagayaki Natsuka, Ibaraki; Noriaki Shimokawa, Nagaokakyo; Masanao Shimizu, Kobe, and Hideo Nakamura, Tenri, all of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

Division of Ser. No. 663,158, Mar. 2, 1976, Pat. No. 4,080,453.
This application Aug. 4, 1977, Ser. No. 821,918
Claims priority, application Japan, Mar. 12, 1975, 50-30559; Jul. 22, 1975, 50-89849; Jul. 22, 1975, 50-89851; Jul. 22, 1975, 50-89852; Jul. 22, 1975, 50-89853; Nov. 27, 1975, 50-142496
Int. Cl.[2] C07D *241/04;* A61K *31/495*
U.S. Cl. 424—250 15 Claims

1. A compound of the formula:



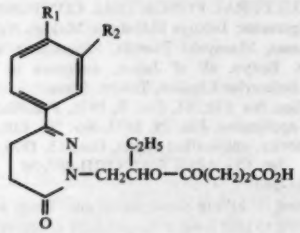
wherein X is hydroxy or an alkanoyloxy having from 2 to 5 carbon atoms; and R is an unsubstituted monocycloalkyl having from 5 to 8 carbon atoms, or a pharmacetuically acceptable salt thereof.

4,162,317
SUCCINIC ACID ESTERS OF 2-HYDROXYBUTYL-4,5-DIHYDRO-3(2H)-PYRIDAZINONES AND THEIR USE AS MUSCLE RELAXANT AGENTS

William J. Houlihan, Mountain Lakes, N.J., assignor to Sandoz, Inc., E. Hanover, N.J.

Filed May 25, 1978, Ser. No. 909,516
Int. Cl.[2] C07D *237/14;* A61K *31/50*
U.S. Cl. 424—250 4 Claims

1. A compound of the formula



where R_1 is hydrogen fluoro or chloro , and
R_2 is hydrogen, chlorine or lower alkyl having 1 to 4 carbon atoms.

3. A pharmaceutical composition useful in the treatment of muscle tension consisting essentially of a therapeutically effective amount of a compound according to claim 1 and a pharmaceutically acceptable carrier therefore.

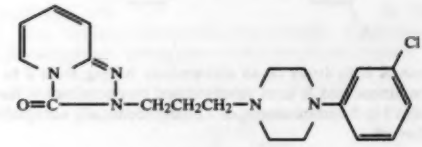
4,162,318

USE OF TRAZODONE AND ETOPERIDONE IN PARKINSONISM AND IN OTHER EXTRAPYRAMIDAL SYNDROMES CHARACTERIZED BY TREMORS

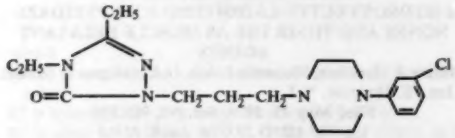
Bruno Silvestrini, Rome, Italy, assignor to Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A., Rome, Italy

Division of Ser. No. 793,336, May 3, 1977, Pat. No. 4,132,791. This application Jul. 17, 1978, Ser. No. 925,499
Claims priority, application Italy, May 5, 1976, 49321 A/76
Int. Cl.[2] A61K *31/495*
U.S. Cl. 424—250 **2 Claims**

1. A process for the treatment of tremors in Parkinsonism and in other extrapyramidal syndromes which comprises administering orally to a human afflicted with Parkinsonism an amount of trazodone of the formula



or of etoperidone of the formula:



in the range of about 25 mg. three times a day.

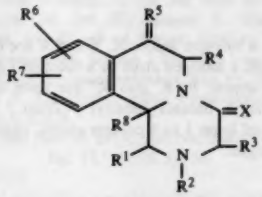
4,162,319

RING SUBSTITUTED PYRAZINO-ISOQUINOLINE DERIVATIVES AND THEIR PREPARATION

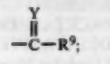
Jürgen Seubert; Rolf Pohlke, both of Darmstadt; Herbert Thomas, and Peter Andrews, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit Beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Division of Ser. No. 817,467, Jul. 20, 1977, Pat. No. 4,120,961, which is a division of Ser. No. 607,810, Aug. 26, 1975, Pat. No. 4,051,243. This application Aug. 7, 1978, Ser. No. 931,576
Claims priority, application Fed. Rep. of Germany, Aug. 28, 1974, 2441261
Int. Cl.[2] A61K *31/495*; C07D *405/02, 401/02*
U.S. Cl. 424—250 **11 Claims**

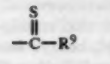
1. A compound of the formula



wherein R^1 is a hydrogen atom, hydroxy or alkyl; R^2 is



R^3 is a hydrogen atom, alkyl or hydroxyalkyl; R^4 is a hydrogen atom, alkyl or phenyl; R^5 is an oxygen atom, two hydrogen atoms, or a hydrogen atom and one of alkyl, phenyl, halogen atom, or hydroxy; R^6 and R^7, which can be alike or different, each are a hydrogen atom, a halogen atom, hydroxy, amino, nitro, cyano, alkyl, alkoxy, alkanoyloxy, monoalkylamino, dialkylamino, alkanoylamino, or benzoyloxy; R^8 is a hydrogen atom or alkyl; R^9 is cycloalkyl or cycloalkenyl of 5 to 7 carbon atoms which is unsubstituted or mono- or disubstituted by R^{10} and is interrupted in the ring by an oxygen atom, a sulfur atom, SO or SO_2, or is thienyl or pyridyl; R^{10} is a fluorine or chlorine atom, hydroxy, nitro, amino, monoalkylamino, dialkylamino, or alkanoylamino; halogen is a fluorine, chlorine, bromine or iodine atom, X and Y, which can be the same or different, each is an oxygen atom or a sulfur atom; alkyl, hydroxyalkyl, alkoxy and alkanoyl unless otherwise indicated being up to 4 carbon atoms; with the proviso that R^2 is



when R^1 and R^3 to R^8, inclusive, each are hydrogen atoms and X is an oxygen atom; and the physiologically acceptable salts thereof.

6. An anthelmintic composition comprising an anthelmintically effective amount per unit dosage of at least one compound of claim 1 in admixture with a pharmaceuticlly acceptable carrier or in admixture with an animal feed or feed concentrate.

4,162,320
COMBATING ARTHROPODS WITH N.N-DIALKYL-O-(4-DIALKYLAMINO-PYRIMIDIN-2-yl)-CARBAMIC ACID ESTERS

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne, and Bernhard Homeyer, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

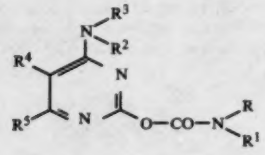
Filed Jun. 14, 1978, Ser. No. 915,623

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1977, 2730273

Int. Cl.[2] A61K *31/505;* **C07D** *239/34*

U.S. Cl. 424—251 **9 Claims**

1. An N-N-dialkyl-O-(4-dialkylamino-pyrimidin-2-yl)-carbamic acid ester of the formula



in which

R, R^1, R^2 and R^3 each independently is alkyl with 1 to 6 carbon atoms,

R^4 is hydrogen, alkyl or alkylthio each with 1 to 4 carbon atoms, or halogen, and

R^5 is hydrogen or alkyl with 1 to 4 carbon atoms.

4,162,321
SULPHUR-CONTAINING AMINO-DIHYDROPYRIDINES, AND THEIR USE AS MEDICANTS

Egbert Wehinger, Velbert; Friedrich Bossert, Wuppertal; Horst Meyer, Wuppertal; Gerhard Franckowiak, Wuppertal; Wulf Vater, Leverkusen; Arend Heise, Wuppertal; Stanislav Kazda, Wuppertal, and Kurt Stoepel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 26, 1977, Ser. No. 828,137

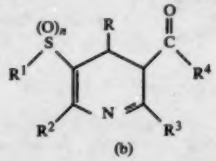
Claims priority, application Fed. Rep. of Germany, Sep. 2, 1976, 2639498

Int. Cl.[2] C07D *213/55;* **A61K** *31/34*

U.S. Cl. 424—266 **11 Claims**

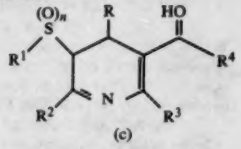
1. A sulphur-containing amino-dihydropyridine of the formula I (a), (b) or (c):

(a)



(b)

-continued



(c)

in which R represents a phenyl or naphthyl each of which is unsubstituted or substituted by 1 or 2 identical or different substituents selected from phenyl, straight-chain or branched alkyl with 1 to 8 carbon atoms, cycloalkyl with 3 to 7 carbon atoms, alkenyl or alkinyl with 2 to 6 carbon atoms, alkoxy with 1 to 4 carbon atoms, alkanoxy and alkinoxy radicals with 2 to 6 carbon atoms, dioxymethylene, fluorine, chlorine or bromine, trifluoromethyl, trifluoromethoxy, nitro, cyano, azido, hydroxyl, amino, monoalkylamino and dialkylamino radicals with 1 to 4 carbon atoms per alkyl group, carboxyl, carbalkoxy with 2 to 4 carbon atoms, carboxamido, sulphonamido and SO_m-alkyl, (wherein m denotes 0, 1 or 2 and the alkyl-group contains 1 to 4 carbon atoms,) and n denotes 0,1 or 2,

R^1 represents a straight-chain, branched or cyclic, saturated or unsaturated aliphatic hydrocarbon radical with up to 8 carbon atoms which is optionally interrupted by an oxygen atom in the chain, or in which a hydrogen atom is optionally replaced by a hydroxyl group or by a phenoxy or phenyl group which is optionally substituted by fluorine, chlorine or bromine, cyano, amino, monoalkylamino and dialkylamino with 1 to 2 carbon atoms per alkyl group in each case, alkoxy with 1 to 4 carbon atoms, alkyl with 1 to 4 carbon atoms, trifluoromethyl or nitro, or by an amino group, this amino group optionally carrying either hydrogen and one substituent or two identical or different substituents selected from alkyl with up to 4 carbon atoms, alkoxyalkyl with up to 4 carbon atoms, alkoxyalkyl with up to 4 carbon atoms, phenyl and benzyl,

R^2 and R^3 are different from one another and each represents amino or dialkylamino with 1 to 2 carbon atoms in the alkyl group in each case and

R^4 represents the group —OR^5, wherein

R^5 represents a straight chain, branched or cyclic, saturated or unsaturated hydrocarbon radical with up to 8 carbon atoms which is optionally interrupted by an oxygen atom in the chain, or in which a hydrogen atom is optionally replaced by a hydroxyl group or by a phenoxy or phenyl group which is optionally substituted by fluorine, chlorine or bromine, cyano, amino, monoalkylamino and dialkylamino with 1 to 2 carbon atoms per alkyl group in each case, alkoxy with 1 to 4 carbon atoms, alkyl with 1 to 4 carbon atoms, trifluoromethyl or nitro, or by an amino group, this amino group optionally carrying either hydrogen and one substituent or two identical or different substituents selected from alkyl with up to 4 carbon atoms, a alkoxy-alkyl with up to 4 carbon atoms, phenyl and benzyl.

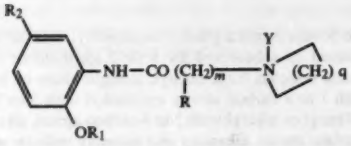
8. A method of treating cardiovascular diseases in warm-blooded animals by vasodilation which comprises administering to the animals an effective amount of an active compound of claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,162,322
N-ACYL ANILINES USED TO INHIBIT GASTRIC HYPERSECRETION

Charles Malen, Fresnes; Pierre Roger, St.-Cloud, and Xavier Pascaud, Paris, all of France, assignors to Science Union et Cie, Societe Francaise de Recherche Med., Suresnes, France

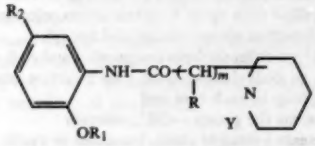
Division of Ser. No. 656,553, Feb. 9, 1976, Pat. No. 4,080,452.
This application Feb. 27, 1978, Ser. No. 881,537
Claims priority, application United Kingdom, Feb. 14, 1975, 6294/75
Int. Cl.[2] A61K *31/445*; C07D *295/00*
U.S. Cl. 424—267 11 Claims

1. A compound of the formula



wherein
m is 0 or an integer of 1 to 5;
q is 2 or 3;
R is hydrogen or lower alkyl of 1 to 6 carbon atoms in the chain;
R_1 is lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 1 to 6 carbon atoms, lower cycloalkyl of 3 to 7 ring carbon atoms or phenyl lower alkyl of 1 to 6 carbon atoms in the side chain;
R_2 is cyano, trifluoromethyl or lower alkanoyl of 1 to 6 carbon atoms;
Y is lower alkyl of 1–6 carbon atoms.

3. A compound selected from a member having the formula



wherein:
m is 0 or an integer of 1 to 5,
R is hydrogen or lower alkyl of 1 to 6 carbon atoms in the chain;
R_1 is lower alkyl of 1 to 6 carbon atoms, lower alkenyl of 1 to 6 carbon atoms, lower cycloalkyl of 3 to 7 ring carbon atoms or phenyl lower alkyl of 1 to 6 carbon atoms in the side chain;
R_2 is cyano, trifluoromethyl or lower alkanoyl of 1 to 6 carbon atoms;
Y is lower alkyl of 1–6 carbon atoms, when present and the acid addition addition salts thereof with organic or mineral acids.

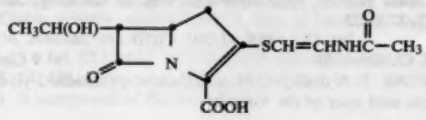
10. A method of inhibiting gastric hypersecretion and delay in gastric evacuation which comprises administering to warm-blooded animals suffering or disposed to suffer from said ailment an inhibitorily effective amount of a compound of claim 3.

4,162,323
ANTIBIOTIC N-ACETYL-DEHYDRO-THIENAMYCIN

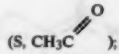
Jean S. Kahan, Rahway, N.J., assignor to Merck & Co., Inc., Rahway, N.J.

Filed Apr. 18, 1977, Ser. No. 788,491
Int. Cl.[2] C07D *487/04*; A61K *31/40*
U.S. Cl. 424—274 2 Claims

1. The compound having the following structure:

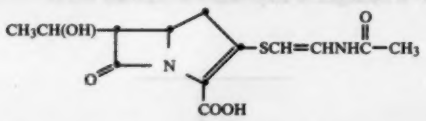


or its pharmaceutically acceptable salts wherein the compound has 300 MHz nuclear magnetic resonance characteristic signals having chemical shifts in ppm as 1.29 (d, J=6, CH_3); 2.08

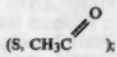


3.10 (d, d, J=12.5, 8.7, 1H of CH_2C); 3.21 (d, d, J=12.5, 9.5, 1H of CH_2C); 3.39 (d, d, J=6.0, 2.5, H_6); 4.22 (m, H_5 and H_7); 6.07 (d, J=13.5, HC=); 7.19 (d, J=13.5, HC=).

2. A composition comprising an antibacterial effective amount of the compound having the following structure:



or its pharmaceutically acceptable salts wherein the compound has 300 MHz nuclear magnetic resonance characteristic signals having chemical shifts in ppm as 1.29 (d, J=6, CH_3); 2.08



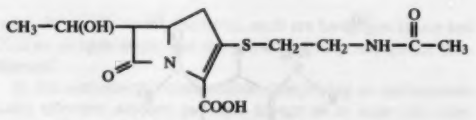
3.10 (d, d, J=12.5, 8.7, 1H of CH_2C); 3.21 (d, d, J=12.5, 9.5, 1H of CH_2C); 3.39 (d, d, J=6.0, 2.5, H_6); 4.22 (m, H_5 and H_7); 6.07 (d, J=13.5, HC=); 7.19 (d, J=13.5, HC=) and a non-toxic pharmaceutically acceptable carrier therefore.

4,162,324
ANTIBIOTICS 890A_1 AND 890A_3

Patrick J. Cassidy, Rahway; Robert T. Goegelman, Linden; Edward O. Stapley, Metuchen, all of N.J., and Sebastian Hernandez, Madrid, Spain, assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 634,300, Nov. 21, 1975, abandoned.
This application Aug. 25, 1977, Ser. No. 827,504
Int. Cl.[2] C07D *487/04*; A61K *31/40*
U.S. Cl. 424—274 6 Claims

1. The compound 890A_1 having the structure:



and its pharmaceutically acceptable salts.

4. A composition comprising an antibacterial effective

amount of the compound 890A_1 and pharmaceutically acceptable salts thereof and a non-toxic pharmaceutically acceptable carrier therefore.

4,162,325

N-SUBSTITUTED LACTAMS

Ludovic Rodriguez, Brussels, and Lucien Marchal, Lillois, both of Belgium, assignors to UCB, Société Anonyme, Saint-Gilleslez-Brussels, Belgium

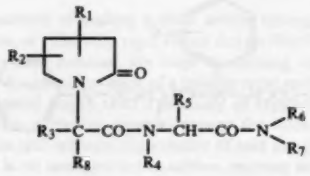
Filed Oct. 19, 1977, Ser. No. 843,692

Claims priority, application United Kingdom, Oct. 22, 1976, 43934/76

Int. Cl.[2] **C07D** *207/26;* **A61K** *31/40*

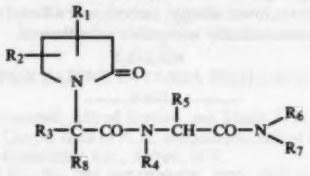
U.S. Cl. 424—274 **12 Claims**

1. An N-substituted 2-pyrrolidinone having the formula



wherein R_1, R_2, R_3, R_4, R_5, R_6 and R_7 represent independently a hydrogen atom, alkyl having 1 to 4 carbon atoms or phenyl, and R_8 is a hydrogen atom or R_8 and R_3 together are ethylene or trimethylene.

12. A composition having activity on the mnemic processes, a protective activity against aggressions of the hypoxic type and which is useful in the prevention and treatment of cerebrovascular or cardiovascular injuries comprising an effective amount for said uses of an N-substituted 2-pyrrolidinone having the formula



wherein R_1, R_2, R_3, R_4, R_5, R_6 and R_7 represent independently a hydrogen atom, alkyl having 1 to 4 carbon atoms or phenyl, and R is a hydrogen atom or R_8 and R_3 together are ethylene or trimethylene, and a pharmaceutically acceptable solid or liquid carrier.

4,162,326

INSECT CONTROL AGENTS

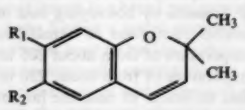
Alexander Mihailovski, Kensington, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Sep. 27, 1978, Ser. No. 946,245

Int. Cl.[2] **A61K** *31/35;* **C07D** *311/02*

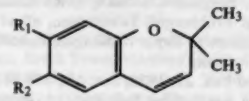
U.S. Cl. 424—283 **14 Claims**

1. A compound having the formula



in which one of R_1 and R_2 is C_3–C_4 alkynoxy or C_3 alkenoxy and the other is hydrogen or methoxy.

11. A method of controlling insects comprising applying to the insect or habitat thereof an effective controlling amount of a compound having the formula



in which one of R_1 and R_2 is C_3–C_4 alkynoxy or C_3 alkenoxy and the other is hydrogen or methoxy.

4,162,327

N,N-DISUBSTITUTED-2-FURYLETHYL AMINES

József Knoll; Zoltan Ecsery; Judit Hermann née Vörös; Zoltán Török; Éva Somfai, all of Budapest, and Gábor Bernáth, Szeged, all of Hungary, assignors to Chinoin Gyogysler Es Vegyeszeti Termeken Gyara Rt., Budapest, Hungary

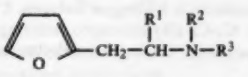
Filed Dec. 27, 1976, Ser. No. 754,278

Claims priority, application Hungary, Dec. 29, 1975, OE 1632

Int. Cl.[2] **A61K** *31/34;* **C07D** *307/52*

U.S. Cl. 424—285 **8 Claims**

1. A racemic or optically active compound of the formula



or a pharmaceutically effective salt thereof wherein R^1 and R^2 are lower alkyl and R^3 is halogenoalkenyl with 2 or 3 carbon atoms and chloro or bromo as the halogen, or propynyl.

4,162,328

CYCLOPROPANE CARBOXYLIC ACID ESTERS

Rene Zurfluh, Bulach, Switzerland, assignor to Hoffmann-La Roche Inc., Nutley, N.J.

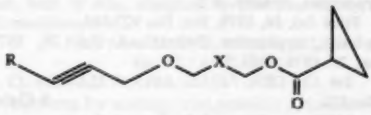
Filed Mar. 23, 1978, Ser. No. 889,598

Claims priority, Austria, Apr. 1, 1977, 2308/77

Int. Cl.[2] **C07C** *69/74;* **A01N** *9/24*

U.S. Cl. 424—305 **21 Claims**

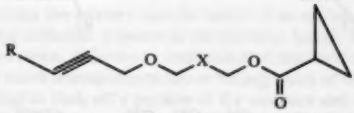
1. A compound of the formula:



I

wherein X is alkylene having 6 to 10 carbon atoms, 1,4-cyclohexylene or 1,4-phenylene; and R is hydrogen or alkyl having 1 to 3 carbon atoms.

8. An insecticidal composition which comprises a compatible carrier material and as an active ingredient one or more compounds of the formula:



wherein X is alkylene having 6 to 10 carbon atoms, 1,4-cyclohexylene or 1,4-phenylene; and R is hydrogen or alkyl having 1 to 3 carbon atoms

in an amount which is effective as an insecticide.

4,162,329

COMBATING FUNGI WITH DICARBOXYLIC ACID MONO-ARYLHYDRAZIDES

Engelbert Kühle, Bergisch-Gladbach; Erich Klauke, Odenthal, and Paul-Ernst Frohberger, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

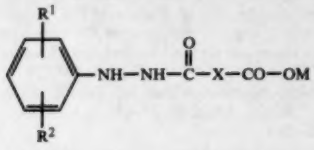
Filed Feb. 21, 1978, Ser. No. 879,547

Claims priority, application Fed. Rep. of Germany, Mar. 22, 1977, 2712434

Int. Cl.[2] A61K *31/175, 31/195;* **C07C** *130/30*

U.S. Cl. 424—319 **7 Claims**

1. A method of combating fungi which comprises applying to the fungi, or to a habitat thereof, a fungicidally effective amount of at least one dicarboxylic acid monoarylhydrazide, or a salt thereof, of the formula



in which

R^1 and R^2 each independently is hydrogen, halogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, C_1-C_4 alkylmercapto, trihalogenomethyl, trihalogenomethoxy, trihalogenomethylmercapto or nitro,

X is an alkylene, alkenylene, cycloalkylene, cycloalkenylene, cycloalkadienylene or phenylene radical, and

M is hydrogen or one equivalent of an alkali or alkaline earth metal or ammonium.

4,162,330

ACYLUREA INSECTICIDES

Josef Ehrenfreund, Allschwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

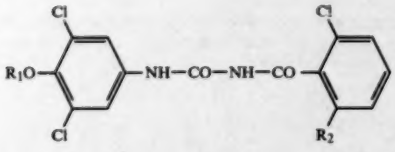
Filed Jul. 24, 1978, Ser. No. 927,444

Claims priority, application Switzerland, Jul. 28, 1977, 9349/77; Jun. 29, 1978, 7101/78

Int. Cl.[2] C07C *127/22;* **A01N** *9/12*

U.S. Cl. 424—322 **9 Claims**

1. N-Phenyl-N'-benzoylurea of the formula I



(I)

wherein

R_1—represents $CH_2{=}CH{-}CH_2{-}$, $CHCl{=}CCl{-}$, $CHCl{=}CH{-}CH_2{-}$, $CH_2{=}CCl{-}CH_2{-}$, $CCl_2{=}CH{-}CH_2{-}$, $CHCl{=}CCl{-}CH_2{-}$ or $CH{\equiv}C{-}CH_2{-}$, and

R_2—represents hydrogen or chlorine.

4,162,331

SUBSTITUTED N-(CARBOXYMETHYL)-3-AMINOPROPAN-2-OL DERIVATIVES

Hiromu Murai; Katsuya Ohata; Hiroshi Enomoto; Shoichi Chokai; Mitsuhiro Machara; Katsuhide Saito, and Takayuki Ozaki, all of Kyoto, Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

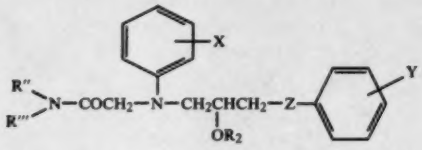
Division of Ser. No. 692,878, Jun. 4, 1976, Pat. No. 4,064,252. This application Jan. 24, 1977, Ser. No. 762,021

Claims priority, application Japan, Jun. 17, 1975, 50-74014; Jun. 17, 1975, 50-74015

Int. Cl.[2] C07C *103/76*

U.S. Cl. 424—324 **15 Claims**

1. A compound of the formula:



wherein

Z is oxygen or sulfur;

X is hydrogen, halogeno, lower alkyl, lower alkoxy, carboxy, carbo(lower alkoxy) or carbamoyl;

Y, when Z is sulfur, is hydrogen, halogeno or lower alkyl, or, when Z is oxygen, hydrogen, halogeno, lower alkyl, lower alkoxy, aralkoxy, hydroxy, carboxy, or carbo(lower alkoxy);

R_2 is hydrogen, lower alkyl or alkanoyl of 1 to 7 carbon atoms; and

each of R'' and R''' taken independently is hydrogen, phenyl, unsubstituted or substituted with up to two methyl groups, or lower alkyl unsubstituted or substituted by hydroxy, lower alkoxy, carbo(lower alkoxy) or phenyl,

and the pharmaceutically acceptable salts thereof.

4,162,332

METHOD AND APPARATUS FOR PRODUCING A MEAT ANALOG

Boleslaw Sienkiewicz, Pearl River; William J. Meyer, Orangeburg, and Joseph Giacone, Elmsford, all of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Division of Ser. No. 395,793, Sep. 10, 1973, Pat. No. 3,999,474. This application Oct. 18, 1976, Ser. No. 733,579

Int. Cl.[2] A23J *3/00*

U.S. Cl. 426—249 **16 Claims**

1. A process for preparing simulated meat products which comprises:

(a) preparing at least one slurry comprising oil, water and heat coagulable protein;

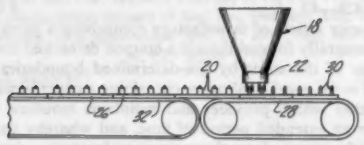
(b) applying at least one layer of said slurry to a moving surface to form a layered mass of the slurry; and

(c) subjecting the layered mass to moist heat at substantially atmospheric pressure by conveying said mass through a heat-set chamber comprised of humidified air having a wet bulb temperature of from about 205 to 212° F. and a dry bulb temperature of from about 220 to 280° F., for a period of time sufficient to raise the internal temperature thereof to about 180° to 200° F. to coagulate said heat coagulable protein therein without removing significant amounts of moisture therefrom, whereby undue product expansion does not occur.

4,162,333
METHOD AND APPARATUS FOR MAKING FILLED FOOD PRODUCT

Richard L. Nelson, and Walter P. Nelson, both of Battle Creek, Mich., assignors to Mars Incorporated, Mclean, Va.

Filed Aug. 3, 1978, Ser. No. 930,757
Int. Cl.[2] A21C *3/04, 9/06;* A21D *8/02*
U.S. Cl. 426—283 4 Claims

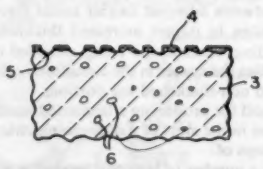


1. The method of making a food article having a tubular body portion of relatively rigid baked dough filled with relatively softer food material, the steps comprising; extruding a plurality of dough pieces each of a tubular cross section and of a predetermined length onto a plurality of support members disposed in an extruding zone to engage the interior of said dough pieces and wherein the exterior of said dough pieces is maintained in an unsupported condition, moving said support members and dough pieces through a baking zone for a predetermined period of time to form tubular body portions, removing the body portions from said support members and returning said support members to said extruding zone, transferring said body portions to holding members, moving said holding members and body portions to a filling zone and filling said tubular body portions with relatively soft food material.

4,162,334
METHOD FOR BAKING IN TERRA SIGILLATA COATED PAN

William B. Crandall, Alfred Station, and Linda J. Wasserstein, Rockville Centre, both of N.Y., assignors to Alfred University Research Foundation Inc., Alfred, N.Y.

Division of Ser. No. 791,507, Apr. 27, 1977. This application Aug. 21, 1978, Ser. No. 935,663
Int. Cl.[2] A21D *8/06*
U.S. Cl. 426—505 9 Claims



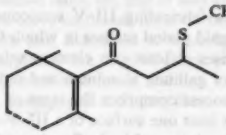
1. A method for baking bread having taste and physical characteristics of brick oven baked bread, said method comprising baking bread dough in a bread pan comprising a porous fired brickware body having a water permeability of at least about 2% and having at least its baking surfaces coated with a fired terra sigillata coating, said coating closing only a portion of the pores of said surfaces of said body such that the brickware body imparts the taste and physical qualities of brick oven baked bread to the bread in the bread pan while rendering said surfaces free from sticking propensities toward the baked bread.

4,162,335
FLAVORING WITH 1-[3-(METHYLTHIO)BUTYRYL]-2,6,6-TRIMETHYL-CYCLOHEXENE AND THE 1,3-CYCLOHEXADIENE ANALOG

Richard A. Wilson, Westfield; Braja D. Mookherjee, Holmdel; Anne S. Hruza, Brick Town; Manfred H. Vock, Locust; Louis S. Frederick, Holmdel, and Joaquin F. Vinals, Red Bank, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 774,055, Mar. 3, 1977, Pat. No. 4,107,209. This application Jun. 21, 1978, Ser. No. 917,689
Int. Cl.[2] A23L *1/226*
U.S. Cl. 426—535 3 Claims

1. A process for augmenting or enhancing the aroma or taste of a foodstuff which comprises adding thereto about 0.5 ppm up to about 20 ppm by weight based on total composition of a substantially pure synthetically produced 1-(3-(methylthio)-butyryl)-2,6,6-trimethyl-cyclohexene or the 1,3-cyclohexadiene analog defined by the structure:



wherein the dashed line is a carbon-carbon single bond or a carbon-carbon double bond.

4,162,336
MONOSACCHARIDE-CONTAINING DRY PET FOOD HAVING YIELDABLE ELASTIC STRUCTURE

Arthur V. Brown, Jr., Bessemer, and Richard J. Karrasch, Sterrett, both of Ala., assignors to The Jim Dandy Company, Birmingham, Ala.

Filed Nov. 21, 1977, Ser. No. 853,540
Int. Cl.[2] A23L *1/09*
U.S. Cl. 426—623 4 Claims

4. A process for making a compressibly deformable extruded food comprising the steps of

forming a mixture consisting essentially of 7½% to 20% by weight of a hexose monosaccharide selected from the group consisting of aldohexoses, ketohexoses, and mixtures thereof, with 15% to 35% by weight of ground cereal grains, 15% to 35% by weight of non-adhesive protein selected from the group consisting of fish meal, fleshy animal byproducts and acid-coagulated gluten meal and water,

introducing the mixture into the barrel of an extruder,

applying sufficient pressure in the extruder barrel, without added steam, whereby to cook said extruded food causing it to reach a temperature above boiling point of water,

extruding to flash off a portion of the moisture and to puff the remaining ingredients, whereby to produce an undried product having a moisture content of substantially 20%, and

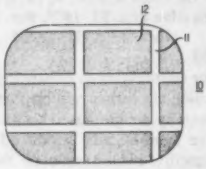
drying during continuous cooling without reheating to a moisture content of substantially 15% by weight.

4,162,337

PROCESS FOR FABRICATING III–V SEMICONDUCTING DEVICES WITH ELECTROLESS GOLD PLATING

Lucian A. D'Asaro, and Yutaka Okinaka, both of Madison, N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Nov. 14, 1977, Ser. No. 851,612
Int. Cl.[2] C23C 3/02
U.S. Cl. 427—92 20 Claims



1. A process for fabricating III–V semiconductor devices with at least one gold plated surface in which the III–V semiconductor comprises at least one element selected from the group consisting of gallium, aluminum and indium characterized in that the process comprises the steps of

(a) activating at least one surface of a III–V semiconductor using an acid solution of hydrofluoric acid and activator species containing at least one ion selected from the group consisting of gold, platinum and palladium and solvent consisting of at least one substance selected from the group consisting of water and weak organic acid with up to three carbon atoms; and

(b) exposing the activated surface to an electroless gold plating solution so as to produce a gold layer on the III–V semiconductor surface.

4,162,338

COATED CEMENTED CARBIDE ELEMENTS AND THEIR MANUFACTURE

Wilfried Schintlmeister, Reutte, Austria, assignor to Schwarzkopf Development Corporation, New York, N.Y.

Division of Ser. No. 571,695, Apr. 25, 1975, Pat. No. 4,101,703, which is a continuation of Ser. No. 329,128, Feb. 2, 1973, abandoned. This application Feb. 3, 1978, Ser. No. 875,071
Claims priority, application Austria, Feb. 4, 1972, 896/72; Jul. 21, 1972, 6317/72
Int. Cl.[2] B05D 1/36, 3/10, 7/14
U.S. Cl. 427—249 24 Claims

3. A method of producing an article of manufacture comprising a cemented carbide substrate bearing an adherent wear-resistant coating, the composition of said coating varying through its depth and thickness from titanium carbide rich, titanium nitride poor closest to the substrate to titanium nitride rich, titanium carbide poor furthest from the substrate, said method comprising depositing titanium compounds from gaseous mixtures comprising a gaseous titanium compound, a hydrocarbon gas and a nitrogen-containing gas, regulating the quantities of hydrocarbon gas and nitrogen-containing gas present in the mixture at any given time to provide first a hydrocarbon gas rich, nitrogen gas poor mixture and finally a hydrocarbon gas poor, nitrogen gas rich mixture, to thereby deposit from the vapor phase an essentially pure titanium carbide coating layer closest to said substrate, an intermediate coating layer of titanium carbonitrides and an essentially pure coating layer of titanium nitride furthest from said substrate.

4,162,339

NEWSPRINT COUPON SEPARATOR

Friedrich J. Weck, 1339 S. Seventh Ave., Hacienda Heights, Calif. 91745; James Hunkins, 13001 Aclare Pl., Cerritos, Calif. 90701, and Samuel J. Rinsler, 712 N. Kings Rd., Los Angeles, Calif. 90069

Division of Ser. No. 596,999, Jul. 18, 1975, Pat. No. 4,073,982. This application Feb. 7, 1978, Ser. No. 875,813
Int. Cl.[2] B41M 7/00; B32B 29/06
U.S. Cl. 428—43 6 Claims

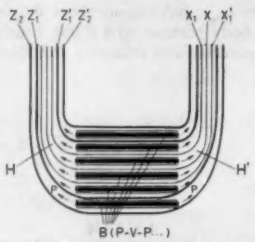
1. A paper article of manufacture comprising a paper sheet having integrally formed therein a coupon demarked from the remainder of the sheet by pre-determined boundaries comprised of moist, weakened paper containing a paper weakening composition which provides and maintains moisture in the paper for an extended period of time, and whereby hand removal of the coupon from the paper sheet by tearing along said boundaries is facilitated.

4,162,340

METHOD OF MANUFACTURING SLOT INSULATION FOR DYNAMO-ELECTRIC MACHINES FROM MOLDED LAMINATES AND SLOT INSULATION PRODUCED BY THE METHOD

Heinz Fuchs, Embrach, Switzerland, assignor to Micafil AG, Zurich, Switzerland

Filed Mar. 9, 1977, Ser. No. 775,921
Int. Cl.[2] B32B 3/08, 3/00
U.S. Cl. 428—83 11 Claims



1. A profiled laminated insulation material having adjacent leg portions disposed at a right angle to each other for installation in the slots of a dynamo-electric machine which comprises a number of carrier bands of a resin treated insulation material extending throughout both leg portions, and at least one reinforcing ply of insulation material and strip of a fiber-filled resinous molding material capable of flow under pressure interposed between adjacent carrier bands throughout one of said leg portions to impart increased thickness thereto, said resinous molding material also being extended into and homogeneously filling the spaces in the transition region between the thickened and non-thickened leg portions.

11. A method for producing a laminated insulation structure for installation in the slots of a dynamo-electric machine comprising the steps of:

assembling a number of layers of insulation material, including one or more layers of resin-treated paper and at least one layer of resin-treated woven glass filaments covering each side of said one or more layers of resin-treated paper, for lamination to each other;

inserting at least one ply of fiber-reinforced insulation material and at least one strip of a fiber-filled epoxy resin between adjacent layers of the insulation material to impart increased thickness to a predetermined region of the laminated structure; and

supplying sufficient pressure to the assembly of the layers of insulation material, fiber-reinforced ply and epoxy resin to cause lamination thereof and flow of some of the epoxy resin into spaces in the transition areas between the prede-

termined thickened region and the non-thickened portions of the structure.

4,162,341

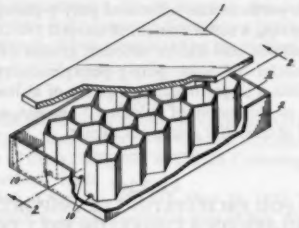
HONEYCOMB INSULATION STRUCTURE

Richard V. Norton, Wilmington, Del., assignor to Suntech, Inc., Wayne, Pa.

Division of Ser. No. 661,907, Feb. 26, 1976, Pat. No. 4,088,723, and a continuation-in-part of Ser. No. 500,966, Aug. 26, 1974, abandoned. This application Nov. 21, 1977, Ser. No. 853,968

Int. Cl.[2] B32B *3/12*

U.S. Cl. 428—117 **3 Claims**



1. A thermal insulating structure comprising:

(1) a honeycomb spacer having notches on one edge of the honeycomb spacer;

(2) cells of the honeycomb spacer partially filled with foam wherein

(a) an empty space exists along portions of the honeycomb spacer having the notches;

(b) an integral foam skin covers the other edge of the honeycomb spacer;

(c) foam filling the remainder of the cells; and

(3) the density of foam within a majority of the cells is between from about 2 pounds per cubic foot to about 20 pounds per cubic foot and the density of the integral foam skin is between from about 20 pounds per cubic foot to about 80 pounds per cubic foot.

4,162,342

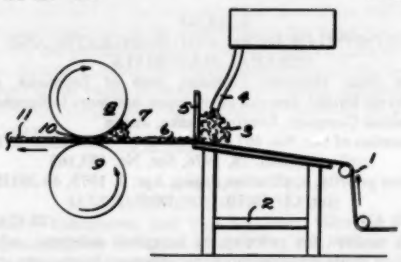
FOAM COATED CEILING BOARD FACING AND METHOD OF MAKING THE SAME

William C. Schwartz, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Aug. 30, 1976, Ser. No. 718,624

Int. Cl.[2] B32B *3/12;* **B05D** *5/00*

U.S. Cl. 428—159 **22 Claims**



1. A process for manufacturing a cellular foam coated, sculptured, nubby fabric useful as a ceiling board facing and the like, comprising:

forming on at least one face of a nubby textured fabric a uniform layer of a cellular foamed latex containing vinyl chloride polymer, a cell producing surfactant, a white powdered pigment, and a flame retardant,

passing said nubby textured fabric coated with a uniform layer of cellular foamed latex between gapped means for removing foam and sculpturing said uniform layer of cellular foamed latex, the gap of said gapped means being adjusted to leave sufficient foam on the fabric to provide extra depth and nubbiness to said fabric face without hiding completely the original fabric pattern and without crushing said cellular foam, and

drying and curing said cellular foam coated, sculptured, nubby fabric.

19. A cellular foam coated, sculptured, nubby fabric useful as a ceiling board facing manufactured by the process of:

forming on at least one face of a nubby textured fabric a uniform layer of cellular foamed latex containing vinyl chloride polymer, a cell producing surfactant, a white powdered pigment, and a flame retardant,

passing said nubby textured fabric coated with a uniform layer of cellular foamed latex between gapped means for removing foam and sculpturing said uniform layer of cellular foamed latex, the gap of said gapped means being adjusted to leave sufficient foam on the fabric to provide extra depth and nubbiness to said fabric face without hiding completely the original fabric pattern and without crushing said cellular foam, and

drying and curing said cellular foam coated, sculptured nubby fabric.

4,162,343

MULTILAYER LIGHT-REFLECTING FILM

Forrest S. Wilcox, Montrose; Jules Pinsky, Scarborough, and Scott A. Cooper, Yorktown Heights, all of N.Y., assignors to The Mearl Corporation, Ossining, N.Y.

Filed Dec. 23, 1977, Ser. No. 863,800

Int. Cl.[2] G02B *1/10, 5/28;* **B32B** *27/30, 27/32*

U.S. Cl. 428—212 **16 Claims**

1. A transparent thermoplastic resinous film of at least 10 substantially uniformly thick layers comprising a core having a pair of generally parallel surface layers thereon, said core comprising a plurality of generally parallel layers, said surface and core layers being of transparent thermoplastic resinous material in which the contiguous adjacent layers are of diverse resinous material differing in refractive index by at least about 0.03, each surface layer being of greater thickness than any of the core layers and the combined thickness of the surface layers being at least 5% of the thickness of said core, wherein at least one of said diverse resinous materials is a mixture of polyolefin and ethylene vinyl acetate.

13. In a process of forming a transparent thermoplastic resinous film of at least 10 generally parallel layers in which contiguous adjacent layers are of diverse resinous material differing in refractive index by at least 0.03, by coextrusion, the improvement which comprises forming each surface layer so as to be a greater thickness than any of the core layers and such that the combined thickness of the surface layers is at least 5% of the thickness of said core and forming at least one of said diverse resinous materials from a mixture of polyethylene and ethylene vinyl acetate, whereby a substantially uniform thickness of said layers is realized.

4,162,344

POROUS RESIN IMPREGNATED STRATIFIED FIBER FLEXIBLE SHEET BACKED MAT AND PROCESS OF FORMING THE SAME

James M. Rones, Atlanta, Ga., assignor to American Manufacturing Company, Atlanta, Ga.

Filed Jul. 27, 1978, Ser. No. 928,334

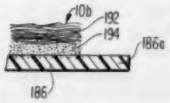
Int. Cl.[2] B32B *7/02, 31/00*

U.S. Cl. 428—212 **2 Claims**

1. A high integrity, form maintaining, wear resistant porous fiber mat comprising:

a solitary, integral, composite non-woven omni-directional thermosetting binder impregnated fiber web consisting of a first stratified sublayer of coarse denier fiber and a second stratified sublayer of fine denier fiber, and

an integral sheet of cured thermoplastic backing material bonded to the fine denier fiber stratified sublayer, with the surface portions of said fine denier fiber stratified sublayer being embedded within said thermoplastic backing material,



whereby, said coarse denier fiber presents an outer surface layer having greater resistance to physical deformation and wear under heavy use, and said fine denier fiber stratified sublayer surface portion provides improved locking of the non-woven, omni-directional thermosetting binder impregnated fiber web to said backing material by partial embedment of the fine denier fiber stratified sublayer within said thermoplastic backing material.

4,162,345

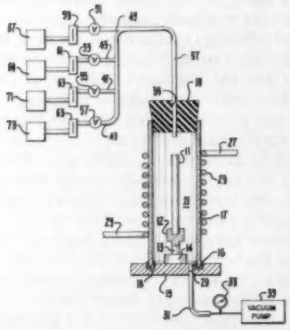
DEPOSITION METHOD AND PRODUCTS

Robert A. Holzl, La Canada, Calif., assignor to Chemetal Corporation, Pacoima, Calif.

Continuation of Ser. No. 702,436, Jul. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 588,391, Jun. 19, 1975, abandoned, which is a continuation-in-part of Ser. No. 358,110, May 7, 1973, abandoned. This application Nov. 7, 1977, Ser. No. 849,122

Int. Cl.[2] C23C *29/00*

U.S. Cl. 428—328 **23 Claims**



1. A method for producing a hard deposit on a substrate, comprising, providing a gaseous volatile halide of tungsten or molybdenum, reacting said volatile halide spaced from the surface of the substrate in the presence of an alcohol, ketone or ether to form a first intermediate compound of tungsten or molybdenum which is spaced from the surface of the substrate, reacting said first intermediate compound in the presence of gaseous hydrogen and one or more gases containing oxygen and carbon to cause the deposition on the substrate of a second intermediate compound of tungsten or molybdenum which is in a liquid phase, and reacting the liquid phase second intermediate compound on the surface of the substrate to produce a hard deposit containing essentially tungsten or molybdenum and carbon and having a modulus of rupture in bending exceeding 200 kilograms per square millimeter.

4,162,346

HIGH PERFORMANCE WHOLLY AROMATIC POLYAMIDE FIBERS

Rufus S. Jones, Jr., Randolph; Marshall Tan, Ridgefield Park, and Eui W. Choe, Randolph, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Continuation of Ser. No. 726,090, Sep. 23, 1976, abandoned. This application Nov. 29, 1977, Ser. No. 855,792

Int. Cl.[2] D02G *3/00*

U.S. Cl. 428—364 **7 Claims**

1. A high performance sulfonated poly-p-phenyleneterephthalamide having a sulfur content of about 0.5 to 10 percent by weight as sulfonic acid and/or sulfonate groups attached to the aromatic nuclei of said poly-p-phenyleneterephthalamide which exhibits a single filament tenacity of at least 15 grams per denier, an elongation of at least 1.5 percent, and an initial modulus of at least 400 grams per denier.

4,162,347

METHOD FOR FACILITATING TRANSPORTATION OF PARTICULATE ON A CONVEYOR BELT IN A COLD ENVIRONMENT

Carl T. Montgomery, Sperry, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 14, 1977, Ser. No. 860,501

Int. Cl.[2] B32B *9/04*; C09K *3/118*

U.S. Cl. 428—411 **16 Claims**

1. A method for facilitating transportation of particulate solids on a conveyor belt, at least a portion of which is exposed to a temperature of less than 0° C., comprising:

(a) contacting the surface of said belt upon which the particulate solids are transported with from about 0.001 to about 0.01 gallons per square foot of belt surface, of a composition containing from about 0.05 to about 2% by weight a dimethyl polysiloxane, with the balance consisting substantially of water soluble components comprising

(A) a water soluble polyhydroxy compound or monoalkyl ether thereof, and

(B) a water soluble organic nonvolatile compound having at least one hydrophilic group, said compound (B) being different from said compound (A),

said composition being substantially free of corrosion inducing metal halide salts;

(b) placing particulate solids on the treated belt;

(c) moving the belt so that said solids are transported; and

(d) exposing at least a portion of the treated belt surface to a temperature of less than 0° C.

4,162,348

COLORING OF INORGANIC SUBSTRATES AND MINERAL MATERIALS

Shigeru Juzu; Hiroyuki Okazaki, both of Toyonaka, and Yasuyuki Suzuki, Ibaraki, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 457,303, Apr. 2, 1974, abandoned. This application Jan. 28, 1976, Ser. No. 653,163

Claims priority, application Japan, Apr. 2, 1973, 48-38155

Int. Cl.[2] B05B *5/00*; D06L *3/12*

U.S. Cl. 428—474 **20 Claims**

1. A method for coloring an inorganic substrate, which comprises contacting the inorganic substrate in separate steps but in any order with (1) a cationic component comprising

(a) a water soluble cationic resin or an aqueous solution of a water soluble cationic resin, said cationic resin comprising at least one of polyamide-polyamine-epichlorohydrin resins, polyamine-epichlorohydrin resins, polyvinylamine-polyacrylamide-epichlorohydrin resins and polyethyleneimine polymers,

(b) an aqueous solution of said water soluble cationic resin and a water soluble cationic dye, or
(c) an aqueous dispersion of said water soluble cationic resin, a cationic dispersing agent plus a water insoluble dye or pigment, and with (2) an anionic component comprising
(d) an aqueous solution of a water soluble anionic dye,
(e) an anionic dispersing agent or an aqueous solution of an anionic dispersing agent,
(f) an aqueous solution of an anionic dispersing agent and a water soluble anionic dye, or
(g) an aqueous dispersion of an anionic dispersing agent plus a water insoluble dye or pigment and with at least one of the cationic component (1) or the anionic component (2) containing a colorant comprising at least one of a pigment, a direct dye, an acid dye, a reactive dye, a vat dye, a disperse dye, and an anionic fluorescent brightner.

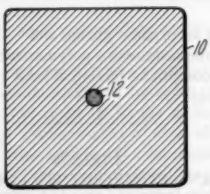
12. An inorganic substrate colored by the method of claim 1.

4,162,349

FABRICATION OF Co-Cr-Al-Y FEED STOCK

Richard C. Elam, Manchester, and Nicholas E. Ulion, Marlborough, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 800,112, May 24, 1977, Pat. No. 4,110,893, which is a continuation-in-part of Ser. No. 582,036, May 29, 1975, abandoned, Ser. No. 739,213, Nov. 5, 1976, abandoned, is a division of said Ser. No. 582,036. This application Dec. 15, 1977, Ser. No. 861,031
Int. Cl.[2] B21F *00/00*; B22F *3/24*
U.S. Cl. 428—614 2 Claims



1. An ingot for use as feed stock in a coating operation, in which the ingot is vaporized in a crucible, said ingot being of a shape and dimension to fit the crucible, said ingot being a coating alloy including chromium, cobalt, and aluminum and also including a reactive element yttrium, the alloy not being readily workable whereas the reactive element is workable and the alloy without the reactive element is workable, said ingot having a centrally extending rod of the reactive element yttrium, the remainder of the ingot including chromium, cobalt, and aluminum without the reactive element yttrium and having the proper proportion of these elements of the alloy therein, the ratio of the cross-sectional area of the rod to the cross-sectional area of the remainder of the ingot being substantially the percentage of the reactive element yttrium in the alloy, thereby assuring the desired percentage of the reactive element in the vapor produced for the coating operation, the ingot when completed being melted and vaporized for a coating operation.

4,162,350

MAGNETIC RECORD MEMBER

Masahiro Yanagisawa, and Yoji Suganuma, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 700,191, Jun. 28, 1976, abandoned. This application Jul. 13, 1978, Ser. No. 924,185
Claims priority, application Japan, Jul. 1, 1975, 50/81201
The portion of the term of this patent subsequent to Jan. 17, 1995, has been disclaimed.
Int. Cl.[2] B32B *15/00*
U.S. Cl. 428—633 7 Claims

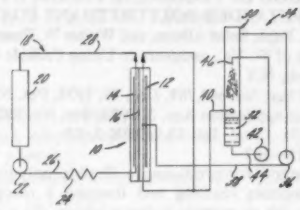
1. A magnetic record member comprising: an alloy disc; a non-magnetic alloy layer coated on the alloy disc and polished to a mirror surface; a magnetic metal thin film medium coated on the polished non-magnetic alloy layer; and a polysilicate film including 2 to about 56 weight percent silanol radicals coated on the surface of the magnetic metal thin film for protecting, preserving and enhancing the useful life of the record member.

4,162,351

METAL-HALOGEN CELL OPERATION WITH STORAGE OF HALOGEN VIA ORGANIC COMPLEXATION EXTERNAL TO THE ELECTROCHEMICAL CELL

Ronald A. Putt, Palatine, and Mark J. Montgomery, Lake Zurich, both of Ill., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Oct. 12, 1977, Ser. No. 841,391
Int. Cl.[2] H01M *8/08*
U.S. Cl. 429—15 10 Claims



1. A battery system comprising at least one cell, an electrolyte containing halogen therein and at least one negative electrode and one halogen positive electrode positioned in said cell, a storage means for halogen in the liquid phase located externally of the cell, means for circulating electrolyte between said storage means and said cell, and means providing sufficient liquid-liquid contact between the electrolyte and the halogen in said storage means to maintain the desired concentration of halogen in the electrolyte.

9. A method of operating a battery system including at least one halogen positive electrode and an electrolyte containing halogen which comprises providing a storage for halogen in a liquid phase external of the cell, circulating electrolyte between the halogen storage and the cell, and providing sufficient liquid-liquid contact in the storage between the electrolyte and the halogen to maintain the desired concentration of halogen in the electrolyte.

4,162,352

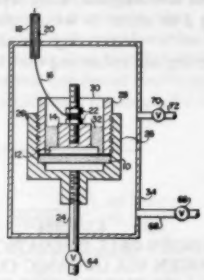
BATTERY WITH BORON-LITHIUM ALLOY ANODE

Raymond A. Sutula, Laurel, and Frederick E. Wang, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washingon, D.C.

Filed Sep. 24, 1976, Ser. No. 726,368
Int. Cl.[2] H01M *12/06*
U.S. Cl. 429—29 6 Claims

1. A current generating electrochemical cell comprising an anode material, a cathode material, and an electrolyte selected from the group consisting of solid and fusible electrolytes positioned between and in contact with said anode material

and said cathode material wherein said anode material consists essentially of from about 50 weight percent to about 90 weight



percent of lithium and from about 10 weight percent to about 50 weight percent of boron.

4,162,353

METHOD OF PRODUCING FLEXIBLE FLAME RETARDED POLYURETHANE FOAM

Anthony J. Papa, Saint Albans, and Walter W. Runyan, Charleston, both of W. Va., assignors to Union Carbide Corporation, New York, N.Y.

Division of Ser. No. 644,789, Dec. 29, 1975, Pat. No. 4,097,559. This application Apr. 3, 1978, Ser. No. 892,752

Int. Cl.[2] C08K *5/52*

U.S. Cl. 521—107 **10 Claims**

1. A method for producing a flexible polyurethane foam which comprises reacting and foaming a reaction mixture containing: (a) an organic polyisocyanate; (b) a polyol; (c) a catalyst for the reaction of (a) and (b); (d) a blowing agent; and (e) a polyphosphate thermal condensate comprising the reaction product of an unsubstituted trialkylphosphate having the following structure:

$$(RO)_{3-n}P(OR')_n$$

wherein R is CH_3, C_2H_5, C_3H_7 or C_4H_9; R′ is a C_5 to C_{10} hydrocarbon chain and n is 0, 1 or 2 with a 2-haloalkyl phosphate having the following structure:

$$(R''CHCH_2O)_{3-n}P(OR)_n$$

wherein x is Cl or Br; R″ is H, CH_3, CH_2Cl or CH_2Br; and R and n are defined above, said thermal condensate being present in an amount sufficient to impart flame retardancy to the resulting flexible polyurethane foam.

4,162,354

PROMOTERS FOR RADIATION INDUCED CROSS-LINKING IN POLYMER SUBSTANCES

Dale S. Pearson, and Anton Shurpik, both of Hauppauge, N.Y., assignors to The Firestone Tire & Rubber Co., Akron, Ohio

Continuation of Ser. No. 555,110, Mar. 4, 1975, which is a continuation of Ser. No. 395,177, Sep. 7, 1973, abandoned, which is a division of Ser. No. 148,883, Jun. 1, 1971, Pat. No. 3,843,502. This application Feb. 21, 1978, Ser. No. 879,435

Int. Cl.[2] C08F *28/00*

U.S. Cl. 525—3 **5 Claims**

1. Vulcanizable compositions suitable for the formation of vulcanizates of diolefin rubbers by exposure to high energy ionizing radiation at a total dose of from about 0.1 to 15 Mrads, said compositions comprising diolefin rubbers having an average molecular weight of from about 100,000 to about 500,000 together with from about 0.1 to 5% based on the total weight of at least one polyhydrosulfide direct radiation vulcanization promoter together with from about 0.1 to 5% of an indirect radiation vulcanization promoter which is a low molecular weight halogenated aliphatic or aromatic hydrocarbon containing up to about 10 carbon atoms.

4,162,355

COPOLYMERS OF (A) AMINIMIDES AND (B) VINYL PENDANT PRIMARY HALOMETHY MONOMERS USEFUL FOR AFFINITY CHROMATOGRAPHY

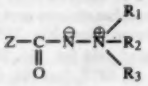
John C. M. Tsibris, Gainesville, Fla., assignor to Board of Regents, for and on behalf of the University of Florida, Tallahassee, Fla.

Filed Jun. 30, 1976, Ser. No. 701,410

Int. Cl.[2] C08F *4/04, 14/02, 20/52, 214/02*

U.S. Cl. 526—293 **2 Claims**

1. A polymer suitable for use in affinity chromatography comprising an addition copolymer of (1) at least one aminimide of the structural formula:



wherein

R_1 and R_2 are the same or different and represent lower alkyl;

R_3 represents an organic group, and

Z represents the residue of a polymerizable vinyl compound, and (2) a vinyl compound having at least one pendant primary halomethyl group.

4,162,356

METHOD AND COMPOSITION FOR RENDERING FLEXIBLE SHEET MATERIAL NON-ADHERENT

Maurice E. Grenoble, Ballston Lake, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 748,738, Dec. 9, 1976, abandoned, which is a division of Ser. No. 593,571, Jul. 7, 1975, abandoned, which is a continuation-in-part of Ser. No. 523,898, Nov. 14, 1974, abandoned. This application Mar. 13, 1978, Ser. No. 885,645

Int. Cl.[2] C08L *83/04*

U.S. Cl. 528—31 **5 Claims**

1. A solventless composition for rendering flexible sheet materials non-adherent to surfaces which normally adhere thereto, said composition consisting essentially of:

(a) A silanol chainstopped polysiloxane having the formula:

wherein R is a monovalent hydrocarbon radical or a cyanoalkyl radical and t has a value which will give a viscosity between 300 and 1000 cstks at 25° C.;

(b) An organic hydrogenpolysiloxane of the formula:

$$(R)_a(H)_bSiO_{(4-a-b)/2}$$

wherein R is the same as hereinabove defined, a is 0 to 3, b is 0.005 to 2.0 and a plus b is 0.8 to 3; and

(c) an amount of a catalyst for curing said composition.

4,162,357

PROCESS FOR THE PRODUCTION OF SYNTHETIC RESINS CONTAINING ISOCYANURATE GROUPS

Rolf Kubens, Odenthal, and Heinrich Heine, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 1, 1978, Ser. No. 901,534

Claims priority, application Fed. Rep. of Germany, May 17, 1977, 2722400

Int. Cl.[2] C08G *18/02*

U.S. Cl. 528—67 10 Claims

1. In a process for the production of heat-resistant synthetic resins containing isocyanurate groups by the polymerization of organic polyisocyanates in the presence of catalysts which accelerate the trimerization of isocyanate groups, the improvement wherein said polyisocyanate component is a mixture of isomers and/or homologs of polyisocyanates of the diphenylmethane series containing more than 20%, by weight, of 2,4'-diisocyanatodiphenylmethane.

4,162,358

POLYAROMATIC AMINE CURING AGENTS FOR EPOXY RESINS

Edward T. Marquis, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Aug. 28, 1978, Ser. No. 937,364

Int. Cl.[2] C08G *59/50*

U.S. Cl. 528—120 15 Claims

1. A curable epoxy resin composition consisting essentially of:

a vicinal epoxide; and, an effective amount of a methylene bridged polyaromatic amine curing agent prepared by the steps of mixing and reacting, in the presence of a solid acidic catalyst, at a temperature of from about 100° C. to about 300° C., (1) an aniline, (2) a mononuclear aromatic diamine having amine groups bonded to nonadjacent carbon atoms of the aromatic ring; and (3) formaldehyde; wherein the amount of the mononuclear aromatic diamine present is from about 2 mole percent to about 8 mole percent, based upon the total amine charged, and the mole ratio of the total amine charged to formaldehyde is from about 2.5 to about 8; to produce a methylene bridged polyaromatic amine material;

whereby, when such composition is cured, an epoxy resin having improved heat distortion temperature is obtained.

4,162,359

PRODUCTION OF CELLULOSE ACETATE

Phyllis C. Leithem, McCleary, and Romeo Conca, Shelton, both of Wash., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 13, 1978, Ser. No. 886,285

Int. Cl.[2] C08B *1/02, 3/06*

U.S. Cl. 536—70 7 Claims

1. In a process for producing cellulose acetate from highly purified cellulosic dissolving pulp comprising subjecting the dissolving pulp to a bleaching sequence including at least one alkaline extraction stage and acetylating the bleached pulp to convert the pulp to cellulose acetate,

the improvement in which the yellowness index of the cellulose acetate is reduced comprising carrying out the alkaline extraction stage in the presence of from 0.2 to 3.3% based on dry pulp weight of a peroxide selected from the group consisting of hydrogen peroxide and sodium peroxide.

4,162,360

3-CARBAMOYLOXYMETHYL-7-SUBSTITUTED OXIMINO ACETAMIDO CEPHALOSPORANIC ACID DERIVATIVES

Janice Bradshaw, Harrow; Martin C. Cook, Liverpool, and Gordon I. Gregory, Chalfont St. Peter, all of England, assignors to Glaxo Laboratories Limited, Greenford, England

Division of Ser. No. 668,246, Mar. 18, 1976, Pat. No. 4,060,686, which is a continuation-in-part of Ser. No. 533,451, Dec. 16, 1974, abandoned. This application Sep. 13, 1977, Ser. No. 832,956

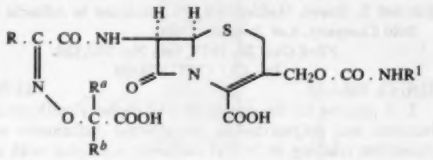
Claims priority, application United Kingdom, Dec. 21, 1973, 59517/73

The portion of the term of this patent subsequent to Nov. 29, 1994, has been disclaimed.

Int. Cl.[2] C07D *501/32, 501/34*

U.S. Cl. 544—16 4 Claims

1. A cephalosporin antibiotic of the formula



wherein

R is thienyl, furyl or phenyl;

R^a is methyl, ethyl, propyl, isopropyl, butyl, allyl, cyclohexyl or phenyl;

R^b is hydrogen, methyl, ethyl, propyl, isopropyl, butyl, allyl, cyclohexyl or phenyl;

R^1 is hydrogen or methyl; or a physiologically acceptable salt, ester, or 1-oxide thereof.

4,162,361

MORPHINE/APOMORPHINE REARRANGEMENT PROCESS

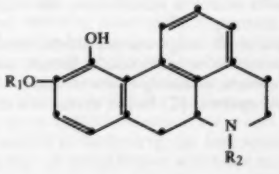
Roman R. Lorenz; Edward D. Parady, and William H. Thielking, all of Schodack, N.Y., assignors to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 757,888, Jan. 10, 1977, abandoned. This application May 18, 1978, Ser. No. 907,901

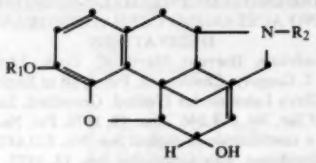
Int. Cl.[2] C07D *215/14*

U.S. Cl. 546—72 7 Claims

1. The process for preparing a compound having the formula:



where R_1 is hydrogen or lower-alkyl; and R_2 is hydrogen, lower-alkyl, lower-alkenyl, lower-alkynyl, phenyl-lower-alkyl or cycloalkyl-lower-alkyl which comprises the steps of heating at a temperature in the range from 125° to 140° C. a compound having the formula:



where R_1 and R_2 have the meanings given above with anhydrous orthophosphoric acid under a partial vacuum and hydrolyzing the resulting phosphate esters in an aqueous medium.

4,162,362

PROCESS FOR THE PREPARATION OF DIPHENYLMETHANE DICARBAMATES AND POLYMETHYLENE POLYPHENYL CARBAMATES

Edward T. Shawl, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Oct. 20, 1978, Ser. No. 953,135

Int. Cl.[2] C07C *125/04*

U.S. Cl. 560—25 **13 Claims**

1. A process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates which comprises reacting an N-aryl carbamic acid ester with a carbonyl compound selected from formaldehyde, para-formaldehyde or trioxane or mixtures thereof, at a temperature of from ambient to about 170° C. in the presence of an organic sulfonic acid catalyst medium selected from alkane sulfonic acids, halogenated alkane sulfonic acids or aromatic sulfonic acids which have an acid concentration of at least 75 percent and recovering the desired carbamates.

4,162,363

CONVERSION OF DIENES OR MONOOLEFINS TO DIESTERS

Paul R. Stapp, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1977, Ser. No. 827,641

Int. Cl.[2] C07C *67/05*

U.S. Cl. 560—246 **41 Claims**

1. A process for the production of diesters which comprises:

reacting at least one unsaturated reactant selected from conjugated diolefins and monoolefins with oxygen and a carboxylic acid reactant media employing a catalyst system comprising (A) a sulfur source and (B) an alkali metal compound, optionally (C) with a halide source;

wherein said unsaturated reactant is selected from unsubstituted and substituted diolefins and monoolefins wherein the substituents are selected from the group consisting of halogen, cyano, —COOR′, and hydrocarbyl radicals, wherein R′ is hydrogen or an alkyl or aryl radical,

said carboxylic acid media is selected from the group consisting of mono- and dicarboxylic aliphatic and aromatic acids and mixtures with acid anhydrides, having 2 to 18 carbon atoms per molecule,

said (A) sulfur source is sulfur, sulfur chloride, sulfur bromide or mixture;

said (B) alkali metal compound is a halide, nitrate, carboxylate, oxide, sulfide, or hydroxide, or lithium, sodium, potassium, or cesium, including mixtures; and

wherein said optional (C) halide source is a chloride, bromide, or mixture, and is a media soluble said (A) or (B) wherein said (A) or (B) is the halide, or is a haloolefin.

4,162,364

PROCESS FOR THE PREPARATION OF 2-(3-BENZOYLPHENYL)-PROPIONIC ACID

Boris Zupancic, Ljubljana, and Branko Jenko, Ljubljana-Polje, both of Yugoslavia, assignors to LEK Tovarna farmacevtskih in kemicnih izdelkov, n.sol.o., Ljubljana, Yugoslavia

Filed Oct. 17, 1977, Ser. No. 842,822

Claims priority, application Yugoslavia, Oct. 18, 1976, 2547/76

Int. Cl.[2] C07C *51/24, 51/33*

U.S. Cl. 562—408 **13 Claims**

1. A process for the preparation of 2-(3-benzoylphenyl)-propionic acid which comprises treating 1-(3-benzoylphenyl)-propine with a thallium(III) salt in a lower alkanol to form 2-(3-benzoylphenyl)-propionic ester; and hydrolyzing said ester to form 2-(3-benzoylphenyl)-propionic acid.

4,162,365

LIQUID PHASE AIR OXIDATION PROCESS FOR MAKING PHTHALIC ACIDS

Ferdinand List, and Helmut Alfs, both of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Hüls Aktiengesellschaft, Marl, Fed. Rep. of Germany

Continuation of Ser. No. 176,262, Aug. 30, 1971, abandoned, which is a continuation-in-part of Ser. No. 773,349, Nov. 4, 1968, abandoned. This application Jul. 13, 1976, Ser. No. 704,955

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1967, 1643827

Int. Cl.[2] C07C *51/33*

U.S. Cl. 562—416 **18 Claims**

1. In a process for the liquid phase oxidation of a dialkyl benzene dissolved in a lower carboxylic acid at a concentration of 5 to 25 weight % with a molecular oxygen-containing gas in the presence of a bromine-activated heavy metal compound catalyst to give phthalic, isophthalic and terephthalic acids, the improvement which comprises carrying out the oxidation at a temperature of 160° to 190° C. in the presence of said catalyst consisting essentially of a catalytic amount of a bromine-activated cobalt compound ranging from 0.5 to 5 grams of cobalt per liter of reaction solution and introducing a sufficient amount of said oxygen-containing gas into said liquid phase such that the reaction will contain a large excess of oxygen at all times and the waste gas produced contains an excess amount of oxygen, forming coarse granules of dicarboxylic acid where 80% of said particles are greater than 100 microns and continuously separating said granules in a centrifuge.

4,162,366

α-TRIFLUOROMETHYL-3-PHENOXYBENZYL ALCOHOL

John F. Engel, Medina, N.Y., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 765,014, Feb. 2, 1977. This application Apr. 7, 1978, Ser. No. 894,263

Int. Cl.[2] C07C *43/20*

U.S. Cl. 568—637 **1 Claim**

1. α-Trifluoromethyl-3-phenoxybenzyl alcohol.

4,162,367

METHOD OF CRUCIBLE-FREEZE ZONE-MELTING A SEMICONDUCTOR ROD AND APPARATUS FOR CARRYING OUT THE METHOD

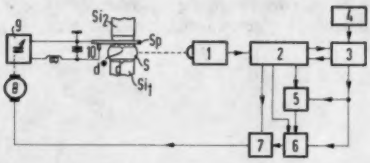
Friedrich Ticak, Munich, and Hans Stut, Grobenzell, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 10, 1978, Ser. No. 923,384

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1977, 2731250

Int. Cl.[2] H05B *5/08;* B01J *17/08*

U.S. Cl. 13—1 7 Claims



1. Method of crucible-free zone-melting a semiconductor rod which comprises monitoring a melting zone formed in and traveling through a semiconductor rod surrounded by an induction heating coil, producing a respective signal corresponding to values of the actual diameters d of the semiconductor rod at a crystallization interface of the melting zone, comparing the signals corresponding to the actual diameter values d with a signal corresponding to a nominal diameter value d_s so as to produce a signal corresponding to a respective first control deviation Δd, continuously combining the signals corresponding to the actual diameter values d and the signal corresponding to the respective first control deviation Δd to form respective signals corresponding to a new nominal diameter value d_s*, respectively, in accordance with the relationships:

(a) $d_s^* = k \cdot d_s \pm \Delta d$, wherein
(b) $0.3 \leqq k \leqq 1.4$, and k = a constant,

comparing the respective signals corresponding to the new nominal diameter value d_s* to respective signals corresponding to an actual diameter value d_1* of the melting zone in a given substantially horizontal cross section thereof located between a melting interface and a maximal, substantially horizontal cross section of the melting zone and having a fixed spacing from at least one of said induction heating coil and said melting interface so as to produce a signal corresponding to a respective second control deviation Δd*, and controlling with the signal corresponding to the respective second control deviation Δd* an operating parameter having an effect upon the geometry of the melting zone so as to adjust the respective actual diameter value d_1* to the nominal diameter value.

4,162,368

ASSEMBLY OF FURNACE ELECTRODES

Ernest R. Brazier, Maidenhead, England, assignor to ERCO Industries Limited, Islington, Canada

Filed Dec. 20, 1977, Ser. No. 862,407

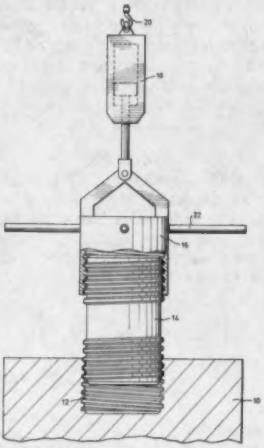
Int. Cl.[2] H05B *7/14*

U.S. Cl. 13—18 C 9 Claims

1. In a method of adding a new electrode segment to an elongate electrode suspended in a furnace wherein the electrode is formed by joining segments having threaded sockets at either end by a correspondingly threaded nipple, the improvement which comprises the following steps:

(a) one end of said nipple is screwed into the socket of a first electrode segment constituting the top end of said electrode at least once while maintaining a tension load between said nipple and said electrode segment,

(b) the other end of said nipple is screwed into one of the sockets of a second electrode segment constituting said new electrode segment at least once while maintaining a tension load between said nipple and said second electrode segment, said steps (a) and (b) being effected to result in a combination of said nipple screwed into either one of said electrode segments but not both, in the socket into which said nipple was previously screwed under tension, and



(c) said combination is screwed into said socket of the other of said electrode segments while maintaining a tension load between said combination and said other of said electrode segments.

4,162,369

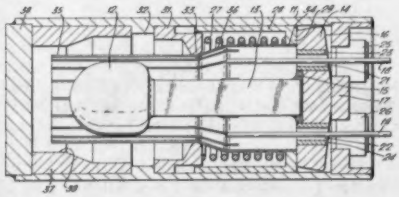
THERMOELECTRIC BATTERY, PROTECTED AGAINST SHOCKS AND ACCELERATIONS

Michael H. Brown, Newbury, and John Myatt, Wantage, both of England, assignors to United Kingdom Atomic Energy Authority, England

Filed Oct. 27, 1977, Ser. No. 846,209

Int. Cl.[2] H01L *37/00*

U.S. Cl. 136—202 5 Claims



1. A thermoelectric battery comprising a casing enclosing a thermoelectric assembly of elongated form, the assembly comprising a heat source, a heat sink and a thermoelectric unit attached to and extending between the heat source and the heat sink, with at least the heat source end of the assembly defining an annular space with the casing, a heat-conducting mass disposed at the heat sink end of the assembly and attached to the casing, a resilient mounting for the thermoelectric unit for reducing the stress applied thereto in the event of shock or acceleration applied to the battery, the heat source being surrounded by a cage of spring fingers which are not normally in contact with the heat source or the thermoelectric unit, each of said fingers being anchored at one end and having the other end thereof normally free, and extending into the said annular space between the heat source and the casing, and an abutment member position to be engaged by a free end of a spring finger in the event that the spring finger is bowed to a predetermined

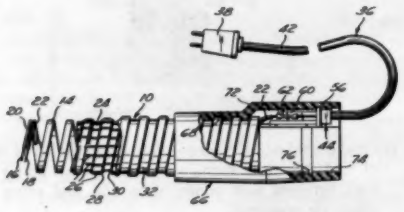
extend by the force of the heat source displaced into engagement with the spring finger under the effect of shock or acceleration, the positioning of the spring fingers and the abutment member being such that the cage of spring fingers provides two stages of arresting force for the heat source when displaced by rocking motion of the assembly in excess of a predetermined amount under shock or acceleration, the first stage comprising the arresting force provided by simple bowing of the free ends of spring finers when engaged by the heat source and the second stage, provided under severe shock or acceleration, comprising the arresting force provided by the bending of a spring finger between two points of support.

4,162,370

CURRENT CARRYING HOSE ASSEMBLY

George T. Dunn, and Alcide W. Choiniere, both of Abbeville, S.C., assignors to Automation Industries, Inc., Los Angeles, Calif.

Filed Jun. 24, 1977, Ser. No. 809,905
Int. Cl.[2] A47L *9/24;* F16L *11/11, 11/12*
U.S. Cl. 174—47 **11 Claims**



2. An electric current and fluid carrying hose assembly comprising:

a pair of helically wound electrical conductors defining a tubular bore and a cover on said helically wound conductors, said helically wound conductors and cover forming a hose; and

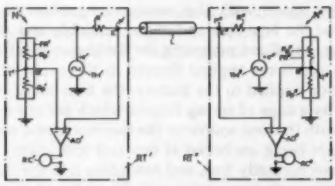
an end connector cuff having screw threads therein of the same pitch and configured to screw onto the end of said hose on said helix defined by the helically wound conductors in said hose, said end cuff being screwed onto the end of said hose.

4,162,371

METHOD OF AND MEANS FOR ESTABLISHING TWO-WAY COMMUNICATION BETWEEN TWO STATIONS INTERCONNECTED BY A SINGLE SIGNAL LINK

Piero Belforte, Turin, Italy, assignor to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A., Turin, Italy

Filed Jan. 13, 1978, Ser. No. 869,171
Claims priority, application Italy, Jan. 14, 1977, 67083 A/77
Int. Cl.[2] H04L *5/14*
U.S. Cl. 178—58 R **13 Claims**



1. A method of facilitating simultaneous signaling in two directions between a pair of stations of a telecommunication system interconnected by an unbalanced transmission line constituting a two-way signal link, comprising the steps of:

generating, at each of said stations, an outgoing signal as a first unbalanced voltage with reference to ground;

splitting said outgoing signal between a conductor of said transmission line and a local circuit;

extracting, at each of said stations, from said conductor a composite signal as a second unbalanced voltage including an incoming signal and a component of said outgoing signal;

deriving from said local circuit a compensating signal substantially identical with said component; and

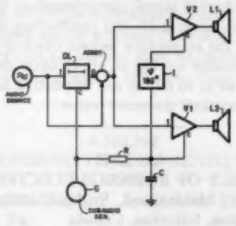
subtracting said compensating signal from said composite signal, thereby producing a further unbalanced voltage substantially corresponding to said incoming signal.

4,162,372

DEVICE FOR ELECTRONICALLY GENERATING THE RADIATION EFFECTS PRODUCED BY A ROTARY LOUDSPEAKER

Ulrich Gross, Geldrop, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 10, 1977, Ser. No. 850,234
Claims priority, application Fed. Rep. of Germany, Nov. 25, 1976, 2653454
Int. Cl.[2] G10H *1/02;* H04M *1/00*
U.S. Cl. 179—1 J **6 Claims**



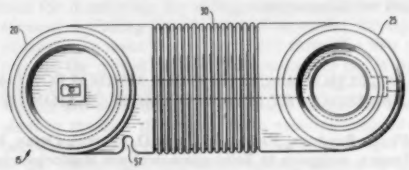
1. A circuit for electronically generating the radiation effects produced by a rotary loudspeaker for use with two loudspeakers, said circuit comprising means for generating a subaudio frequency signal; a variable delay means having signal input means for receiving an audio signal, control input means for receiving said subaudio frequency signal and for varying the delay thereof, and an output means for providing a delayed signal; two amplifiers each having a signal input means for jointly receiving said audio and delayed signals, a gain control input means for receiving said subaudio frequency signal in phase opposition respectively, and an output adapted to be coupled to said loudspeakers respectively; and a phase inverter coupled between said gain control input means.

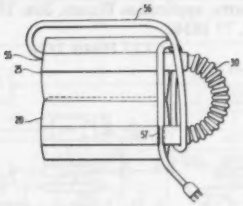
4,162,373

FLEXIBLE ACOUSTIC COUPLER

Jack F. Ingber, San Diego, Calif., assignor to Systems Consultants, Inc., Washington, D.C.

Filed Jun. 29, 1978, Ser. No. 920,612
Int. Cl.[2] H04M *11/00*
U.S. Cl. 179—1 C 11 Claims





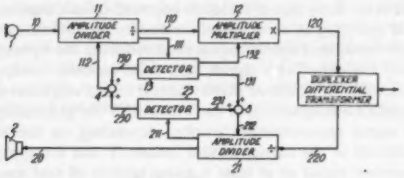
9. An acoustic coupler comprising a pair of muff means each for acoustic coupling with a telephone handset and means joining said muff means for folding movement to bring said muff means into adjoining relation.

4,162,374

VOICE-SWITCHED TELEPHONE SET

Jean-Philippe Girard, 2, rue Pierre-Joseph Redouté, 92360 Meudon-La-Foret, France, and Antoine Bernard, 57, Rue du Professeür Einstein, 94260 Fresnes, France

Filed Dec. 29, 1977, Ser. No. 865,692
Claims priority, application France, Dec. 31, 1976, 76 39791
Int. Cl.[2] H04M *9/08*
U.S. Cl. 179—1 HF 1 Claim



1. A loudspeaker telephone set comprising:

a transmitter channel comprising in series a microphone, transmitter attenuator, transmitter amplifier, and duplexer;

a receiver channel comprising in senes said duplexer, receiver attenuator, and loudspeaker;

means for detecting a transmitter channel speech signal present at the transmitter attenuator output;

means for detecting a receiver channel speech signal at the receiver attenuator output;

means for adding said detected transmitter and receiver speech signals, thereby forming a summed signal;

means for connecting said summed signal to a control terminal on each of said transmitter attenuator and receiver attenuator, and

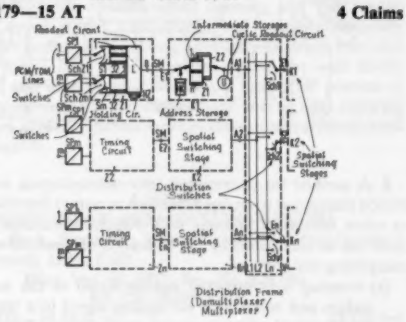
said transmitter amplifier means comprising an amplifier multiplier formed by a balanced modulator having two inputs respectively receiving the transmitter channel speech signal and the detected transmitter channel speech signal.

4,162,375

TIME-DIVISON MULTIPLEX SWITCHING NETWORK WITH SPATIAL SWITCHING STAGES

Max Schlichte, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 729,717, Oct. 5, 1976, abandoned, which is a continuation of Ser. No. 644,865, Dec. 29, 1975, abandoned, which is a continuation of Ser. No. 552,809, Dec. 25, 1975, abandoned, which is a continuation of Ser. No. 343,238, Mar. 21, 1973, abandoned. This application Jan. 19, 1978, Ser. No. 870,750
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1972, 2214202
Int. Cl.[2] H04J *3/00*
U.S. Cl. 179—15 AT 4 Claims



1. A switching network for interconnecting time-division multiplex (TDM) lines which transmit pulse code modulated (PCM) signals having a plurality of individual PCM words, said switching network having a plurality of time and spatial switching circuits associated with different groups of said TDM lines, wherein the individual PCM words are transmitted in parallel form from incoming TDM lines to outgoing TDM lines through said time and spatial switching circuits, said switching network comprising:

intermediate storage means in each of said spatial switching circuits, said intermediate storage means having a plurality of individual storage positions, each of which is individually assigned to a predetermined destination route in said switching network;

writing means connected to said intermediate storage means for writing individual PCM words into said storage positions pursuant to addresses corresponding to the destination routes to be followed by each PCM word, said writing means writing each PCM word into said storage positions during a time interval individually allocated to the origin route of the PCM word, the time interval forming part of the time slot of the time channel associated with that PCM word;

reading means connected to said intermediate storage means for cyclically reading the PCM words from said storage positions in the next time slot;

said switching network including a plurality of said spatial switching circuits in a first stage and a plurality of said spatial switching circuits in at least a second stage following said first stage and

demultiplexer-multiplexer means for connecting the outputs of said spatial switching circuits of said first stage to the inputs of said spatial switching circuits of said second stage to distribute PCM signals, which are interleaved in time at said outputs of said first stage according to destination routes, among said inputs of said second stage corresponding to the destination routes.

4,162,376
CONFERENCE CALL CIRCUIT USING REVERSIBLE ANALOG TO DIGITAL CONVERTER

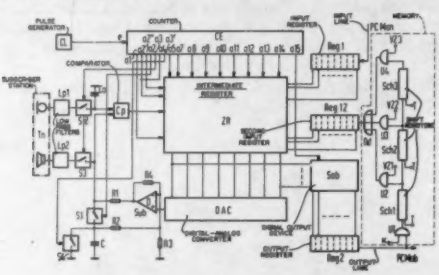
Peter Hirschmann, Puchheim, and Ernst Höefer, Munich, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 21, 1978, Ser. No. 926,920

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1977, 2733227

Int. Cl.[2] H04M *3/00*; H03K *13/02*

U.S. Cl. 179—18 BC **4 Claims**



4. A method for operating a telecommunication subscriber station connected to an input line and an output line connecting to other subscriber stations with which conference connections can be maintained by the formation of summation signals, comprising the steps of:

(a) creating a transmitted analog signal in the subscriber station and converting the analog signal to a transmitted digital signal which is placed on the output line;

(b) storing the transmitted digital signal and then later converting the stored transmitted digital signal to a stored transmitted analog signal;

(c) receiving a digital summation signal from the input line containing the transmitted digital signal of the subscriber station together with transmitted digital signals from the other subscriber stations; and

(d) converting the digital summation signal to an analog summation signal and subtracting the stored transmitted analog signal to create a resulting analog received signal for the subscriber station.

4,162,377
DATA BASE AUTO BILL CALLING USING CCIS DIRECT SIGNALING

Allison B. Mearns, Ocean, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jul. 13, 1978, Ser. No. 924,169

Int. Cl.[2] H04M *15/00*

U.S. Cl. 179—18 D **12 Claims**

1. A method of automatically deriving authorization information from a data base system for billing a special service call to a number other than the number of the station from which the call originates and characterized by

receiving at said data base system a special service call billing message from a communication system and

deriving a billing verification message at said data base in response to said special call billing message, and

transmitting said verification message from said data base system to said communication system to control the further establishment of call connections in accordance with said verification message.

4,162,378
DIGITAL ECHO CANCELER FOR A MODEM FOR DATA TRANSMISSION BY MEANS OF MODULATION OF A CARRIER

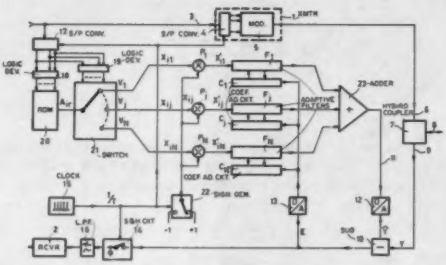
Jean-Pierre Baudoux, Paris, and Cesar D. Macchi, Orsay, both of France, assignors to Telecommunications Radioelectriques et Telephoniques TRT, Paris, France

Filed Jan. 16, 1978, Ser. No. 869,508

Claims priority, application France, Jan. 17, 1977, 77 01197; Jun. 15, 1977, 77 18342

Int. Cl.[2] H04B *3/24*

U.S. Cl. 179—170.2 **18 Claims**



1. A digital echo canceler for a modem for data transmission by means of modulation of a carrier by symbols derived from the binary data to be transmitted and occurring at instant iT, where i is a variable integer and 1/T the symbol rate, the transmitter and the receiver of this modem being connected to the transmission line through a hybrid coupler, the echo canceler receiving the binary data to be transmitted and supplying an echo copy signal which is adjusted in an adaptive manner for reducing an error signal formed by the difference between the modulated carrier signal received from the hybrid coupler and the echo copy signal, said echo canceler comprising an assembly of adaptive digital filters, means responsive to each symbol configuration at each instant iT for generating at least a signal representing a number depending on the amplitude allotted to the carrier at said instant iT and for applying said number signal to at least a given section of said assembly of adaptive digital filters, said filters providing output signals, means for combining said output signals for forming a digital version of the echo copy signal, an assembly of adjusting circuit means for receiving said error signal in digital form and for minimizing a predetermined function of said error signal and for adjusting the coefficients of said filters.

4,162,379
APPARATUS FOR DERIVING A FEEDBACK CONTROL SIGNAL IN A THERMAL SYSTEM

Carl R. Sebens, Stratford, and Chester G. Fisher, III, Southport, both of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 25, 1977, Ser. No. 772,162

Int. Cl.[2] H05B *1/02*

U.S. Cl. 219—497 **1 Claim**

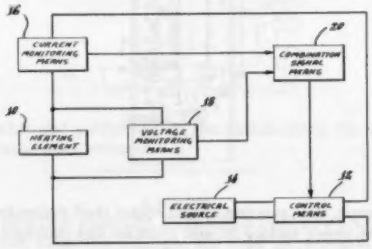
1. In an atomic absorption spectrophotometer, which develops temperatures up to at least about 3000° C., having heat

supplied by applying alternating current to an electrical element, the combination comprising:

means for monitoring the current flow through the heating element including a toroidal coil disposed about one electrical connection to the heating element while output from said toroidal coil is connected across a resistor with one side thereof being grounded;

means for monitoring the voltage drop across the heating element including an operational amplifier having the noninverting input thereof grounded through a first resistor and the output therefrom connected to the inverting input thereof through a second resistor while said inputs thereof are also connected separately across the heating element through third and fourth resistors respectively, output from said operational amplifier being proportional to the voltage drop across the heating element in accordance with the values of said resistors; and

means for linearly combining independent functions of the



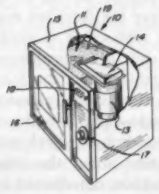
outputs from said current monitoring means and said voltage monitoring means as a composite signal; including a second operational amplifier having the noninverting input thereof grounded through a first resistor and the output therefrom connected to the inverting input thereof through a first variable resistor, each output from said current monitoring means and said voltage monitoring means being separately connected to the inverting and noninverting inputs of said second operational amplifier through AC to DC converters and second and third variable resistors respectively, the output from said second operational amplifier being the algebraic difference between variable functions relating to the outputs from said current monitoring means and said voltage monitoring means with the variability being in proportion to said first, second and third variable resistors; said first, second and third variable resistors being variably responsive to the variation of the electrothermal parameters of the graphite furnace.

4,162,380

WAVEGUIDE ASSEMBLY FOR MICROWAVE OVEN

Harry D. Burke, Marion, Ohio, assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed May 31, 1977, Ser. No. 801,724
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 F **19 Claims**



1. In a microwave oven having wall means defining an oven cavity, said wall means defining an inlet opening, and microwave energy generating means externally of said cavity, an improved waveguide for delivering microwave energy from said generating means through said inlet opening into said cavity, comprising:

a first waveguide member; and

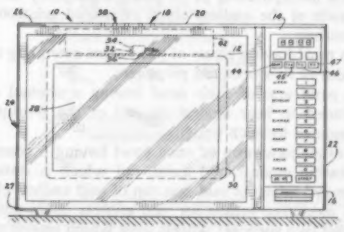
a second waveguide member secured in sealed relationship to said first waveguide member to define therewith a partial waveguide conduit having an inlet opening and an outlet opening, said partial waveguide conduit being secured in sealed relationship to said wall means with said partial waveguide conduit outlet opening generally aligned with said wall means inlet opening to define a substantially closed conduit for conducting microwave energy from said generating means successively through said partial waveguide conduit inlet opening through said partial waveguide conduit, and through said aligned partial waveguide conduit outlet opening and wall means inlet opening into said cavity, said partial waveguide conduit outlet opening being substantially larger than said wall means inlet opening and overlying the wall means about said inlet opening whereby a substantial portion of said wall means adjacent said wall means inlet opening defines with said partial waveguide conduit said improved waveguide.

4,162,381

MICROWAVE OVEN SENSING SYSTEM

Ronald G. Buck, Burnsville, Minn., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Aug. 30, 1977, Ser. No. 829,081
Int. Cl.[2] H05B 9/06
U.S. Cl. 219—10.55 B **21 Claims**



1. A method of controlling cooking in a microwave oven heating cavity comprising the steps of:

(a) storing a microwave cooking algorithm in a programmable controller in a microwave oven;

(b) providing a circulation path from an entrance ventilation port to an exit ventilation port through said microwave oven, said path including said microwave oven heating cavity;

(c) elecromagnetically isolating a humidity sensor and a temperature sensor from said microwave oven heating cavity, said sensors being located in said ventilation path;

(d) coupling microwave energy to said microwave oven heating cavity;

(e) sensing the time dependent environmental conditions of said microwave heating cavity with said sensors during microwave heating in said cavity; and

(f) controlling said microwave energy according to said stored cooking algorithm for said sensed time dependent environmental conditions.

10. A microwave oven sensing system comprising:

a. a microwave oven heating cavity

b. microwave power means coupled to said cavity; and

c. sensor means positioned to sense time dependent environmental conditions of humidity and temperature during microwave cooking in said microwave oven heating cavity.

4,162,382

TRANSPORT DEVICE FOR AN ELECTRICAL RESISTANCE WELDING MACHINE

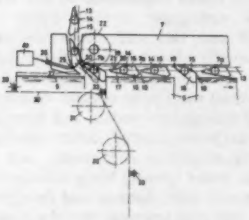
Fred Schalch, Le Landeron, Switzerland, assignor to Fael S.A., Saint-Blaise, Switzerland

Filed Oct. 31, 1977, Ser. No. 846,819

Claims priority, application Switzerland, Nov. 9, 1976, 14088/76

Int. Cl.[2] B23K *1/16;* B65G *19/00;* B21D *51/26;* B23K *37/04*

U.S. Cl. 219—64 10 Claims



1. A transport device for an electrical resistance welding machine for producing lengthwise seams at workpieces to be welded to one another, the transport device delivering the workpieces to the welding machine at a predetermined welding speed, said transport device comprising:

at least one endless chain;

means for mounting said endless chain for revolving movement adjacent the workpieces which are to be transported and moving in a predetermined direction of transport along a feed path;

a guide rail stationarily arranged adjacent one run of said endless chain;

pawls;

means incorporating pivot pins for hingedly mounting the pawls at the endless chain in spaced relation from one another;

each pawl having a pair of pawl arms extending to opposite sides of its associated pivot pin;

one pawl arm of each pawl having a contact surface intended to bear against an end of the workpiece to be engaged by such pawl;

the other pawl arm of each pawl having a control surface bearing against said guide rail which is stationarily arranged adjacent said one run of said endless chain;

said mounting means for said endless chain comprising at least two sprocket wheels over which travels said endless chain;

said guide rail including a linear section and at each end of said linear section a respective section which extends in a substantially curved configuration at the region of a neighboring one of the sprocket wheels in such a manner that upon arrival of a pawl along a curved infeed path at the feed path the pawl arm having the contact surface is controllably rocked into its engagement position with a related workpiece and upon outfeed of the pawl out of the feed path the contact surface of the pawl arm retains its feeding position which is essentially perpendicular with respect to the direction of transport of the workpieces.

4,162,383

OXY-ARC APPARATUS FOR CUTTING INSIDE A PIPE

Masanobu Hamasaki, Takamatsu, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan

Filed Dec. 22, 1976, Ser. No. 753,472

Claims priority, application Japan, Dec. 24, 1975, 50-155649

Int. Cl.[2] B23P *1/00*

U.S. Cl. 219—68 6 Claims

1. A device for cutting a pipe by the oxy-arc cutting process, which comprises, in combination,

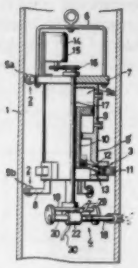
a cylinder internally incorporating a piston and downwardly extending into a circular skirt,

a plurality of claws connected to the lower part of said piston and adapted to be radially thrust out in the direction of the inner wall of a pipe by the descent of said piston,

a plurality of guide rollers radially protruding in the direction of the inner wall of the pipe, some of said guide rollers from adjacent the upper peripheral surface of said cylinder and the others from the peripheral surface of the downwardly extended skirt of said cylinder.

said plurality of claws protruding at a level between the levels containing the upper and lower groups of guide rollers;

a rotary shaft pierced axially through said cylinder and said



piston, with one end of said rotary shaft protruding from the upper surface of said cylinder and provided with a driving unit for the rotary shaft,

an oxy-arc cutting rod disposed at the other end of said rotary shaft by movable means that maintain the leading end of said oxy-arc cutting rod in contact under a fixed force with the inner wall of the pipe at a fixed angle less than 90°, and

means for supplying said oxy-arc cutting rod with electric power and oxygen; whereby said movable means move to maintain said oxy-arc cutting rod in contact with the inner wall of the pipe as the oxy-arc cutting rod is consumed by the oxy-arc cutting process.

4,162,384

MANUAL DOWNSHIFT DEACCELERATION SHIFT LEVER WITH SWITCH ARRAY

Gustave J. Chicoine, 2468 Briarwood Dr., San Jose, Calif. 95125

Division of Ser. No. 659,223, Feb. 19, 1976. This application Jan. 24, 1977, Ser. No. 762,043

Int. Cl.[2] H01H *9/06*

U.S. Cl. 200—61.88 10 Claims

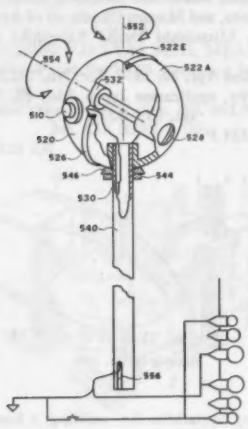
1. A device which permits a driver to manually activate the vehicle braking lights while repositioning the shift lever via a shift knob mounted on the threaded end portion thereof during transmission downshift deacceleration, comprising:

a switch support bracket having an aperture therethrough adapted to receive the threaded end portion of the shift lever, and to be releaseably secured on the threaded end portion of the shift lever proximate the shift knob, the bracket is rotatable about the longitudinal axis of the threaded end portion when released;

a manually operated switch for activating the braking lights, mounted on the switch support bracket at a position along an arc of rotation about the longitudinal axis of the threaded end portion determined by rotating the switch support bracket when released; and

threaded means adapted to engage the threaded end portion

of the shift lever for releaseably securing the switch support bracket to the shift lever to permit rotation of the



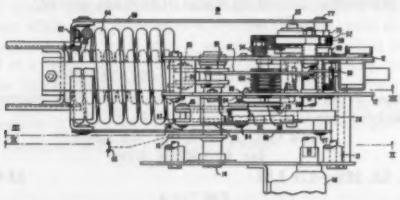
bracket and positioning of the switch along the arc of rotation when released.

4,162,385

DUAL SPRING CIRCUIT INTERRUPTER APPARATUS

Fred Bould, Edgewood Borough, and Peter M. Kowalik, Penn Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 30, 1976, Ser. No. 728,477
Int. Cl.[2] H01H *3/30*
U.S. Cl. 200—153 SC **3 Claims**



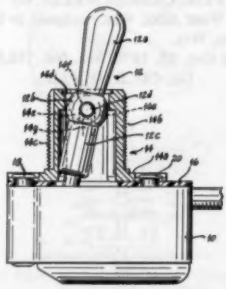
1. A circuit interrupter operating mechanism, comprising:
(a) a support;
(b) contact closing means disposed upon said support and disposable in mechanical relationship with the contacts of a circuit interrupter for closing said contacts;
(c) releasable contact opening means disposed upon said support and disposable in mechanical relationship with said contacts of said circuit interrupter for opening said contacts;
(d) closing spring means disposed upon said support, said closing spring means having a first end which is disposed in fixed relation with said support and a second end which is movable relative to said support between a first fixed position when said closing spring means is charged and a second fixed position when said closing spring means is discharged, said second end being disposed in mechanical relationship with said contact closing means to initiate a closing operation for said contact closing means upon discharge of said closing spring means;
(e) opening spring means disposed upon said support within said closing spring means, said opeing spring means having a first end which is affixed to said support and a second end which is connected in mechanical relationship with said contact opening means and which is maintained in a generally fixed position thereby prior to release of said contact opening means, said second end of said opening spring means being interconnected mechanically with said second end of said closing spring means for being moved by said second end of said closing spring means during the discharging of said closing spring means to thereby charge said opening spring means in compression, said second end of said opening spring means moving upon release of said contact opening means to discharge said opening spring means independently of said closing spring means to thus force an opening operation in said contact opening means;
(f) charging means disposed upon said support for charging said closing spring means; and
(g) releasing means disposed upn said support for releasing said contact opening means.

4,162,386

METHOD OF AND MEANS FOR SECURING AN ELECTRIC SWITCH OPERATING LEVER IN A ONE-HOLE MOUNTING BUSHING

James E. Bourgeois, and Leonardus J. Josemans, both of Smithfield, N.C., assignors to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Nov. 7, 1977, Ser. No. 849,335
Int. Cl.[2] H01H *03/04*
U.S. Cl. 200—339 **3 Claims**



1. In an electric switch or the like having a unitary one-hole mounting bushing and a toggle operating lever, the improvement comprising, providing said lever with oppositely disposed aligned pivot trunnions, providing bearing socket means internally of said bushing in which said lever trunnions seat and said lever is thereby constrained for pivotal movement in one plane, and diametrically opposed portions of the side wall of said bushing sheared through and bent inwardly of said side wall to underlie said pivot trunnions of said lever to thereby restrain the latter against withdrawal from said bearing socket means.

4,162,387

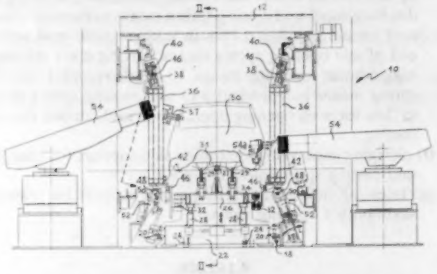
CAR BODY WELDING ASSEMBLY SYSTEM

Ettore De Candia, 78240 Chambourcy, Montaign, France

Filed Jun. 6, 1977, Ser. No. 803,960
Int. Cl.[2] B23K *09/12*
U.S. Cl. 219—79 **20 Claims**

1. A vehicle body welding system comprising, means for accurately positioning an underbody at a main framing welding station, side gate means for accurately positioning other major components of the body relative to said underbody at said station, and means for welding said other components in fixed relation to said underbody while accurately interpositioned at said welding station, said system side gate means including interchangeable means for accuratley locating said other components of different bodies at said station; means for

mounting said side gate means for movement between an open position for admitting introduction of a preliminary preassembled body and a closed position in which said side gate means



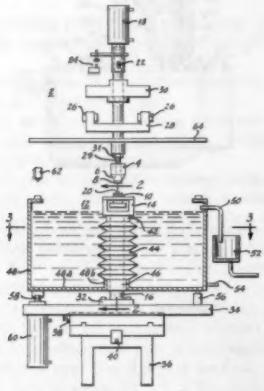
clamps the body in its configuration for welding; and differently programmable means for welding said other components to match each different body at said station.

4,162,388

APPARATUS AND METHOD FOR SUBMERGED PERCUSSION WELDING

Erich E. Heider, West Allis, Wis., assignor to Cutler-Hammer, Inc., Milwaukee, Wis.

Filed Oct. 28, 1976, Ser. No. 736,594
Int. Cl.[2] B23K *9/22*
U.S. Cl. 219—96 **21 Claims**



1. In combination with a percussion welder, wherein a pair of parts to be welded are carried by a pair of electrodes, one of said parts having a small projection to act as an arc starter, said parts being brought together such that said arc starter touches the other of said parts and a means to pass a large current through said arc starter such that said arc starter explodes and vaporizes and an arc passes across facing surfaces of said parts, and including means applying a follow-up force pushing said facing surfaces together to instantaneously close the gap created between said facing surfaces by said explosion of said arc starter, whereby said parts are welded, the improvement comprising:

a container;

liquid confined in said container;

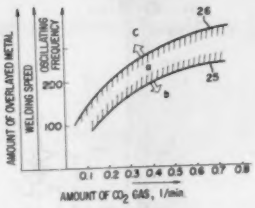
means for submerging said parts in said liquid such that said parts are in intimate contact with said liquid during explosion and vaporization of said arc starter.

4,162,389

WELDING APPARATUS

Wataru Shimdada; Kazumichi Machida; Susumu Hoshinouchi; Seigo Hiramoto, and Masaru Okada, all of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 29, 1977, Ser. No. 792,342
Claims priority, application Japan, May 19, 1976, 51-58106
Int. Cl.[2] B23K *9/12*
U.S. Cl. 219—121 P **6 Claims**



1. A welding apparatus for welding a base metal which comprises:

a reverse polarity soft plasma arc source;

means for supplying shield gas connected to said arc source;

welding rod feeding means disposed adjacent to said arc source;

means for supplying arc current, in reverse polarity, to said arc source operably connected to said arc source and said base metal;

means for controlling feeding speed of said welding rod corresponding to said arc current; and

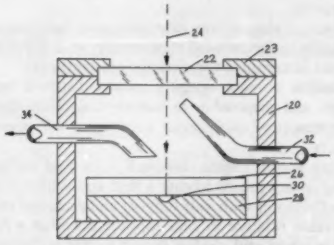
means for imparting a transverse oscillation to said arc source at a predetermined speed and for incorporating an active gas at a predetermined rate in said shield gas wherein said predetermined rate of incorporating active gas is automatically controlled correspondingly to said transverse oscillating speed of said arc source.

4,162,390

LASER WELDING CHAMBER

Thomas J. Kelly, Suffern, N.Y., assignor to The International Nickel Company, Inc., New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 839,027
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 LM **12 Claims**



1. An apparatus for welding with a laser beam comprising:

a. a gas tight vessel enclosing a workpiece to be welded;

b. a light transmitting means for passage of said laser beam into said vessel, said light transmitting means positioned to permit impingement of said laser beam on said workpiece;

c. a gas inlet means for introducing a gas stream into said vessel, said gas inlet means positioned to impinge said gas stream on said light transmitting means and intersect said laser beam; and

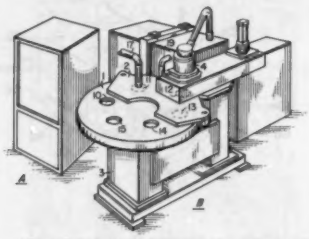
d. a gas exhaust means for the removal of gas from said vessel.

4,162,391

SLIDING VACUUM SEAL MEANS

Albert M. Sciaky, Palos Park, Ill., assignor to Sciaky Bros., Inc., Chicago, Ill.

Filed Dec. 19, 1977, Ser. No. 861,988
Int. Cl.[2] B23K *9/00*
U.S. Cl. 219—121 EB **7 Claims**



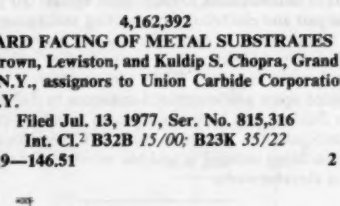
1. An electron beam welding machine for the continuous welding of parts in series comprising a circular table, a seal plate disposed above said circular table, sealable pockets arranged equi-distant from each other adjacent the outer edge of the said table, means within said pockets for supporting workpieces to be welded by an electron beam, means for rotating the said table in a step wise fashion against a sealing arrangement comprising "N" number of continuous flexible seals mounted upon the said seal plate one surrounding the next so as to form "N" number of sealed spaces between the table and the seal plate, additional continuous resilient seals surrounding areas adjacent to each end of the outermost of the aforementioned sealed spaces, means for positioning one of said pockets so that it communicates with the innermost of the aforementioned sealed spaces which is maintained at a desired welding pressure while the following N-1 pockets are positioned so that they communicate each with a separate space which is maintained at a pressure intermediate to the atmospheric pressure and the welding pressure, means for generating, focusing and deflecting a beam of electrons, and means for indexing each of said pockets in sequence into a position under the said electron beam means for a pre-set interval of time.

4,162,392

HARD FACING OF METAL SUBSTRATES

Harry J. Brown, Lewiston, and Kuldip S. Chopra, Grand Island, both of N.Y., assignors to Union Carbide Corporation, New York, N.Y.

Filed Jul. 13, 1977, Ser. No. 815,316
Int. Cl.[2] B32B *15/00*; B23K *35/22*
U.S. Cl. 219—146.51 **2 Claims**



1. A hard-facing rod comprising a metal sheath having a core of hard facing material consisting essentially of chemically combined vanadium, tungsten and carbon in weight proportions of 0.75VC, 0.25WC and about 5% to 40% by weight of Cr_3C_2 admixed therewith from 0 to 100% of said Cr_3C_2 being chemically combined with said chemically combined vanadium, tungsten and carbon in the form of a vanadium, tungsten, chromium carbide having the empirical formula:

$$[ACr_{1.5}.B0.75V,0.25W]C$$

where A=0.05 to 0.4
B=0.6 to 0.95
A+B=1.0

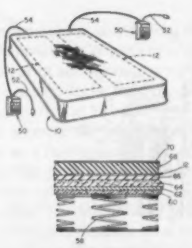
and up to 15% by weight in the aggregate of cobalt, iron, molybdenum and nickel.

4,162,393

ELECTRIC HEATING MATTRESS

Allen J. Balboni, Chepachet, R.I., assignor to Bel Air Industries Inc., Providence, R.I.

Continuation of Ser. No. 786,865, Apr. 12, 1977, abandoned, which is a continuation of Ser. No. 620,548, Oct. 8, 1975, abandoned. This application Jul. 18, 1978, Ser. No. 925,809
Int. Cl.[2] H05B *3/36*
U.S. Cl. 219—217 **2 Claims**



2. An electric heating mattress, comprising a base layer of flexible and compressible material, an upper layer of foam material of substantially the same length and width as said base layer and defining an occupant supporting member, and a heating pad interposed between said base layer and said upper layer of foam material and including a heating area that occupies less than the full length and width of said layers, said heating area including a plurality of separate heating zones that are disposed in head-to-foot relation and normally underlie an occupant, wherein a selected portion of the body of said occupant may be heated as desired, the upper layer of foam having a cellular construction that without a load applied thereto normally inhibits the transfer of heat therethrough, the cellular foam material from which said upper layer is formed being compressible under the load of an occupant on the upper surface thereof to the extent that transfer of heat is permitted therethrough for increasing the temperature of the portions of the upper layer in contact with said occupant, said heating pad being defined by at least one layer of flexible material to which electrically insulated resistance wires are secured, said resistance wires defining the heating area, said pad as interposed between said foam layer and said base layer being located more closely adjacent to the upper surface of said mattress than the bottom thereof, wherein heat is more readily transferred through the areas of the upper layer of foam compressed by the occupant to the body of the occupant, means for securing said pad in place between said base and upper layers, means for encasing said base and upper layers with said heating pad therebetween for the location thereof in oriented relation, means electrically connected to said resistance wires and to a source of electricity for supplying current to said resistance wires in said heating zones, and means for controlling the flow

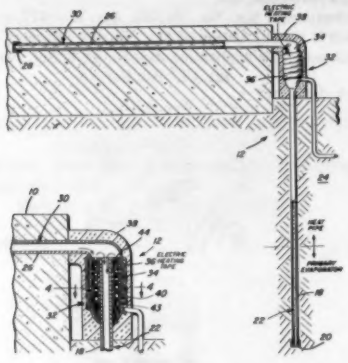
of current to said resistance wires in said heating zones for controlling the temperature of said heating zones and the occupant supporting layer located thereover.

4,162,394

AUXILIARY EVAPORATOR FOR DUAL MODE HEAT PIPES

Ernest C. Faccini, 32 Blair Ave., Rock Springs, Wyo. 82901

Filed Jul. 12, 1977, Ser. No. 815,063
Int. Cl.[2] F28D *15/00*; H05B *1/00*
U.S. Cl. 219—341 **8 Claims**



1. Heat pipe apparatus comprising means containing a condensable working fluid and having a vertically disposed energy input portion and an energy output portion, the energy output portion including a condenser portion in which the working fluid condenses to release heat, the condensed working fluid returning to the energy input portion for vaporization by energy applied to the input portion externally thereof, the energy input portion comprising:

primary evaporator means comprising a tubular member sealed at one end and open at its other end for containing at least a portion of the working fluid, at least a portion of the working fluid being vaporized therein; and

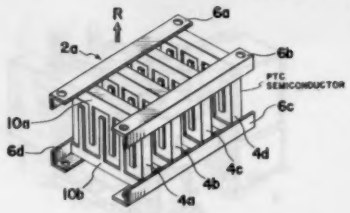
auxiliary evaporator means comprising a tubular sleeve disposed in concentrically spaced relationship about the open end of the tubular member, said tubular sleeve having a closed end portion sealed to the outer wall surfaces of the tubular member whereby a condensate receiving space is defined between the inner wall surfaces of the tubular sleeve and the outer wall surfaces of the tubular member, and the other end of said tubular sleeve extending upwardly of the open end of the tubular member and being in communication with said condenser portion for containing a portion of the working fluid and being disposed between the condenser portion and the primary evaporator means, said auxiliary evaporator means being so constructed and so arranged relative to said primary evaporator means that all of the condensed working fluid returning to the energy input portion enters the auxiliary evaporator means prior to return of a portion thereof to the primary evaporator means, said auxiliary evaporator including a heat producing means for supplying heat thereto.

4,162,395

HEATING UNIT FOR HEATING FLUID

Takashi Kobayashi, and Toshikazu Nakamura, both of Yokaichi, Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Jun. 3, 1976, Ser. No. 692,526
Claims priority, application Japan, Nov. 7, 1975, 50-152141[U]
Int. Cl.[2] H05B *3/14*
U.S. Cl. 219—367 **8 Claims**



1. A heating unit for heating fluid comprising;

a plurality of PTC semiconductor elements each comprising a PTC semiconductor heating body having two opposite flat surfaces parallel to each other and four corners formed at the periphery thereof, an electrode assembly bonded on at least one of said two opposite flat surfaces, said electrode assembly being constituted by first and second sets of electrodes, each set having a plurality of spaced finger-like strips which are electrically connected to each other at one end thereof said strips being disposed in such a manner that neighboring strips are members of the opposite first or second set of electrodes, and first and second terminals bonded on said periphery of said heating body in electrically insulated relation to each other, said first and second terminals being connected to said first and second sets of electrodes, respectively; and

supporting means including two pairs of bar members each made of electrically conductive material and having an L-shaped cross sectional configuration, said bar members of one pair being connected to an adjacent two of four corners of each of said elements and said bar members of the other pair being connected to the remaining two corners of each of said elements for supporting said plurality of PTC semiconductor elements in face to face relation to each other and for electrically connecting said first terminals of said elements to each other by said bar members of one pair and electrically connecting said second terminals of said elements to each other by said bar members of said other pair, said supporting means further including means for positioning said PTC semiconductor elements at spaced apart predetermined distances to define a passage for fluid to pass between adjacent members of said PTC semiconductor elements, said PTC semiconductor elements being secured to said bar members for rigid connection therebetween.

4,162,396

TESTING COPY PRODUCTION MACHINES

Guy J. Howard, Boulder; Walter C. McCrumb, Berthoud, and Paul R. Spivey, Longmont, all of Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

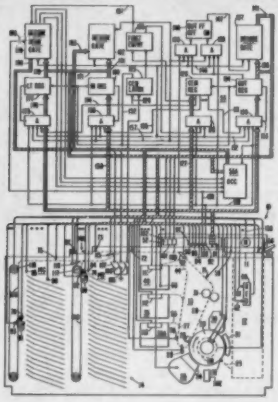
Filed Oct. 27, 1977, Ser. No. 846,083
Int. Cl.[2] G06F *11/00*
U.S. Cl. 235—304 **20 Claims**

1. In a cyclically operable machine, having a control means for cycling the machine through a series of machine cycles and having a plurality of individual control and sensory components, the improvement comprising:

switching means for selectively switching said machine between an operating mode and a maintenance mode;

operating means responsive to said control means and to said switching means for operating said individual control components in predetermined sequences during said machine cycles while in the operating mode;

input means responsive to said switching means for supplying input signals to said control means representative of operating parameters when said machine is in said operating mode and representative of separate addresses for



selecting separate ones of said individual components when said machine is in said maintenance mode; and

means for exercising in said maintenance mode said individual control components, said exercising means including

means coupled to said control means for operating while in the maintenance mode said selected individual control component; whereby each of said individual control components can be selectively operated independently for maintenance purposes.

4,162,397

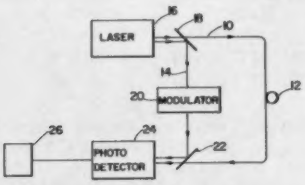
FIBER OPTIC ACOUSTIC SENSOR

Joseph A. Bucaro, Herndon, Va.; Edward F. Carome, South Euclid, Ohio, and Henry D. Dardy, Upper Marlboro, Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 28, 1978, Ser. No. 920,091

Int. Cl.[2] H04B *9/00*; G01V *1/00*; H04B *11/00*

U.S. Cl. 250—199 **9 Claims**



1. An optical system for detecting acoustic wave energy in a fluid medium which comprises:

first and second optical paths,

said first optical path including a single-optic-fiber, repetitive-path, acoustic-wave sensor means which may be placed in a fluid medium to detect an acoustic wave,

said second optical path including a single optic fiber acoustically isolated from said fluid medium in parallel with said first optic path;

means for directing optical radiation in equal amounts through said first and second optical paths;

means in said second path for modulating said radiation passing therethrough;

optical radiation detector means for detecting said radiation passing through said first and second paths; and

means for displaying the output from said detector means.

4,162,398

BIAS CONTROL CIRCUIT FOR LIGHT MODULATORS

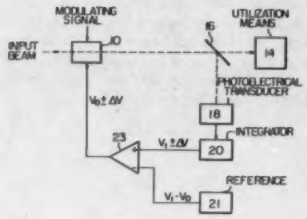
Kanji Kayanuma, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Sep. 13, 1977, Ser. No. 832,892

Claims priority, application Japan, Sep. 14, 1976, 51-110056

Int. Cl.[2] G01J *1/32*

U.S. Cl. 250—205 **8 Claims**



1. A circuit arrangement for controlling the bias potential of a light modulator disposed in the path of a laser beam to modulate the energy thereof in accordance with a modulating electrical signal, wherein said light modulator has an operating characteristic which varies as a function of a biasing potential applied thereto and wherein the intensity of said laser beam has a tendency to vary as a function of time, comprising:

means disposed in the path of the modulated beam for transmitting a fraction of said beam to utilization means and reflecting the other fraction of said beam;

means responsive to said reflected laser beam for generating a second electrical signal representative of the mean value of the modulated energy of said laser beam;

means for generating a third electrical signal representative of the deviation of said second signal from a first reference value, said third signal being applied to said light modulator as said biasing potential;

means disposed in the path of said laser beam incident on said light modulator for reflecting a fraction of said beam and transmitting the other fraction of said beam to said light modulator;

means responsive to the last-mentioned reflected beam for generating a fourth electrical signal which is a replica of the intensity of said beam; and

means for generating a fifth electrical signal representative of the deviation of said fourth signal from a second reference value for cancelling an error present in said modulated light energy as a result of said variation of the intensity of said laser beam.

4,162,399

OPTICAL ENCODER WITH FIBER OPTICS

Charles L. Hudson, North Little Rock, Ark., assignor to BEI Electronics, Inc., Little Rock, Ark.

Filed Sep. 16, 1977, Ser. No. 833,817

Int. Cl.[2] G01D *5/34*

U.S. Cl. 250—231 SE **1 Claim**

1. An optical encoder, comprising

a code member having first and second parallel adjacent longitudinal code tracks,

each of said tracks having alternate segments of relatively high and relatively low reflectivity,

said segments of said first and second code tracks being staggered whereby the segments of relatively high and

low reflectivity of said first track are opposite the segments of relatively low and high reflectivity of said second track,

a fiber optic cable assembly including a plurality of fiber optic cables having terminal ends opposite a plurality of longitudinally spaced points along said code member,

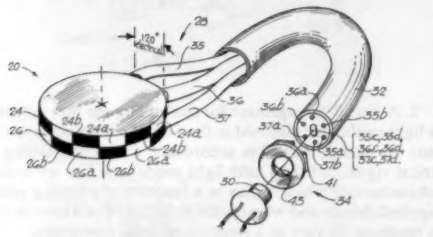
means mounting said code member and said fiber optic cables for relative longitudinal movement,

each of said fiber optic cables having first and second light transmitting fiber optic elements with their terminal ends opposite said respective first and second code tracks for illuminating said code tracks,

each of said fiber optic cables having first and second light receiving fiber optic elements disposed with their receiving ends opposite the respective first and second code tracks for receiving reflected light therefrom,

said first light transmitting fiber optic element and said first light receiving fiber optic element of each cable being disposed with their ends adjacent each other with a boundary therebetween extending transversely to the longitudinal direction of said first code track,

said second light transmitting fiber optic element and said second light receiving fiber optic element of each cable



being disposed with their ends adjacent each other with a boundary therebetween extending transversely to the longitudinal direction of said second code track,

and an optical illuminating and reading head having a centrally disposed light source,

said head having a plurality of photoelectric detectors grouped around said light source,

one of said photoelectric detectors being provided for each of said fiber optic cables,

said fiber optic cable assembly extending between said code member and said head,

all of said first and second light transmitting fiber optic elements having light receiving ends disposed adjacent one another and opposite said light source to receive illumination therefrom for transmission to said code tracks,

each of said photoelectric detectors having first and second photoelectric sensors sharing a common substrate,

the first and second light receiving fiber optic elements of each of said fiber optic cables having terminal ends opposite the respective first and second photoelectric sensors of the corresponding photoelectric detector for delivering the reflected light thereto.

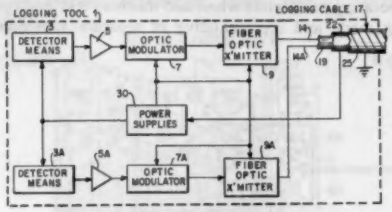
4,162,400

FIBER OPTIC WELL LOGGING MEANS AND METHOD

Robert W. Pitts, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Sep. 9, 1977, Ser. No. 831,844
Int. Cl.[2] G01V *5/00*
U.S. Cl. 250—256 **9 Claims**

1. A well logging system for providing at least one output corresponding to a condition sensed in a bore-hole traversing an earth formation, comprising a logging instrument including means for sensing the condition and providing electrical data pulses corresponding in number and peak amplitude to the sensed condition, and first converting means connected to the sensing means for providing a light pulse for each received electrical pulse and corresponding in intensity to the peak amplitude of the electrical pulses; a well logging cable including a light conductor, and said logging instrument further includes means for applying the light pulses to one end of the



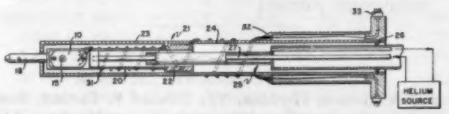
light conductor; and surface apparatus including second converting means connected to the other end of the light conductor for converting each light pulse into corresponding electrical pulse having a peak amplitude corresponding to the intensity of the light, and means connected to the second converting means for processing the electrical pulses therefrom to provide the output corresponding to the sensed condition.

4,162,401

HIGH-RESOLUTION, CRYOGENIC, SIDE-ENTRY TYPE SPECIMEN STAGE

Wayne E. King, Woodridge, and Karl L. Merkle, Clarendon Hills, both of Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 17, 1978, Ser. No. 906,816
Int. Cl.[2] G01N *23/00*
U.S. Cl. 250—311 **9 Claims**



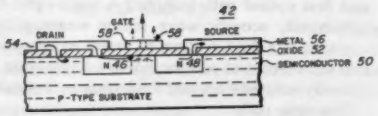
1. A side-entry type cryogenic specimen stage for a high-voltage electron microscope in which in-situ electrical resistivity measurements can be made comprising a copper block within which a specimen can be positioned in the electron beam of an electron microscope, one end of said copper block constituting a specimen heat exchanger, means for directing a flow of helium at cryogenic temperature thereinto, and at least four electrical leads running from the specimen to the exterior of the microscope for resistivity measurements.

4,162,402

FERROELECTRIC IMAGING SYSTEM

George S. Hopper, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 19, 1977, Ser. No. 861,812
Int. Cl.[2] H01J *31/49*
U.S. Cl. 250—332 **10 Claims**



1. A ferroelectric imaging system comprising:

(a) a chopper for interrupting infrared energy emanating from a scene;

(b) a lens system for focusing the infrared energy emanating from the scene;

(c) a detector structure including a ferroelectric detector matrix for receiving the focused infrared energy and producing electrical signals representative of the scene, a switching matrix operatively connected to the ferroelectric detector matrix for selectively charging portions of the ferroelectric detector matrix, a drive means connected to the switching matrix for operating the switching matrix, a voltage bias means connected to the switching means for charging the ferroelectric detector matrix in response to operation of the switching matrix, a read out means connected to the ferroelectric detector matrix for reading out signals representative of the infrared energy impinging on the ferroelectric detector matrix;

(d) a video processor connected to the read out means for processing the electrical signals of the ferroelectric detector matrix into video signals; and

(e) a display connected to the video processor for displaying the video signals representative of the scene.

4,162,403

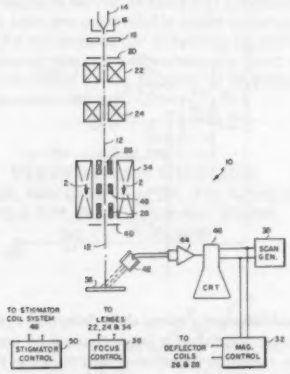
METHOD AND MEANS FOR COMPENSATING FOR CHARGE CARRIER BEAM ASTIGMATISM

Neil H. Baumgarten, Needham, Mass., assignor to Advanced Metals Research Corp., Bedford, Mass.

Filed Jul. 26, 1978, Ser. No. 928,086

Int. Cl.[2] G21K *1/08*; G01M *23/00*

U.S. Cl. 250—396 ML **12 Claims**



1. A method of compensating for charge carrier beam astigmatism in equipment of the type that utilizes such a beam in the generation of an image and that includes astigmatism correcting means including first and second manually and independently adjustable drive means for providing the astigmatism correcting means with first and second drive signals, respectively, to enable a shaping of the beam so as to reduce the astigmatism, each of said first and second drive signals having a range of values, said method comprising the steps of:

A. generating with the beam a mapped X-Y image characterized in that each point with coordinates (V_1,V_2) within said mapped image shows the effect of said first drive means providing the astigmatism correcting means with a drive signal of value V_1 and said second drive means providing the astigmatism correcting means with a drive signal of value V_2;

B. selecting the coordinate location of said mapped image corresponding to the best-corrected area of said mapped image; and

C. applying the drive signal values corresponding to said selected coordinate location to the astigmatism correcting means.

4,162,404

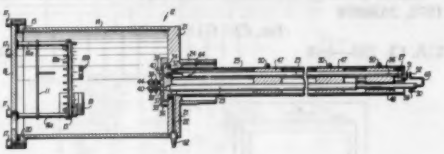
METHOD AND APPARATUS FOR SURFACE IONIZATION MONITOR FOR PARTICULATES

Wade L. Fite; Richard L. Myers, and Richard T. Brackmann, all of Pittsburgh, Pa., assignors to Extranuclear Laboratories, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 711,231, Aug. 3, 1976, Pat. No. 4,093,855, which is a continuation of Ser. No. 465,163, Apr. 29, 1974, Pat. No. 3,973,121, which is a continuation-in-part of Ser. No. 319,442, Dec. 29, 1972, Pat. No. 3,808,433. This application Aug. 2, 1978, Ser. No. 930,361

Int. Cl.[2] H01J *27/00*

U.S. Cl. 250—423 R **11 Claims**



1. A method of monitoring particulates borne in a surrounding gaseous medium which comprises the interception of said particulates by a hot filament, causing said particulates to decompose into bursts of ions, collecting said ions by a nearby electrode, providing a bias potential differential between said electrode and said filament of about 100 or more volts, viewing from a distance through radiation transmission means infrared and optical radiation from said filament and automatically varying the heating power provided to said filament whereby said radiation as viewed is maintained constant, and counting said bursts having a predetermined total charge.

4,162,405

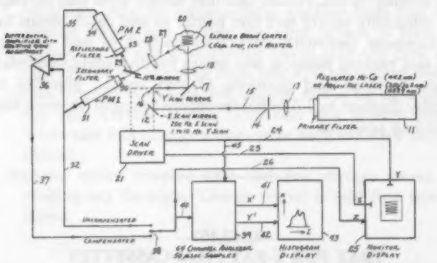
FLYING SPOT FLUORO-METER FOR OXIDIZED FLAVOPROTEIN AND REDUCED PYRIDINE NUCLEOTIDE

Britton Chance, and John R. Sorge, both c/o Johnson Research Foundation, University of Pennsylvania, Philadelphia, Pa. 19174

Filed May 23, 1978, Ser. No. 908,794

Int. Cl.[2] G01N *21/38*

U.S. Cl. 250—461 B **18 Claims**



9. A fluorometer apparatus for measuring the metabolic state of an area of animal tissue comprising a source of excitation radiation, means to direct said radiation from said source in the form of a beam to said area, means to deflect the beam to provide a repeated flying spot raster pattern on said area, whereby to generate emission radiation from the respective illuminated spots of the area of intensities in accordance with their metabolic state, photoelectric sensing means, means to direct the emission radiation to said sensing means, whereby to

generate electrical signals in accordance with the emission intensities of the illuminated spots, and means to form an output on-line histogram display from said electrical signals indicating the relative intensities of the radiation emitted from said respective illuminated spots.

4,162,406

X-RAY APPARATUS COMPRISING AN INTERMITTENTLY DISPLACEABLE FILM HOLDER

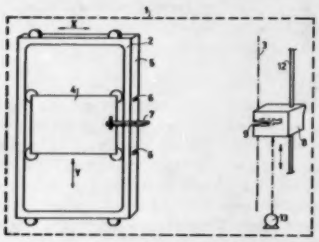
Kurt Gieschen, and Walter Schmedemann, both of Hamburg, Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 9, 1977, Ser. No. 823,106

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1976, 2636078

Int. Cl.[2] G11B *1/00*

U.S. Cl. 250—468 **7 Claims**



1. An X-ray apparatus comprising a support frame, a carriage mounted in said support frame for displacement along a first direction between at least a first position and a parking position, a film holder mounted in said carriage for displacement relative to said carriage in a second direction transverse to said first direction, means for releasably locking said film holder with respect to said carriage in one of a plurality of recording positions spaced along a line extending in a direction generally parallel to said second direction, catch means arranged adjacent said parking position for displacement in a direction parallel to said second direction between a second plurality of spaced positions corresponding to said plurality of recording positions, said catch means being arranged to engage said locking means, release said film holder from said carriage and releasably secure said film holder to said catch means for displacement therewith upon displacement of said carriage into said parking position, and means for displacing said catch means between said positions of said second plurality to thereby displace said film holder secured thereto between said recording positions.

4,162,407

TRAY FOR X-RAY FILM CASSETTES

James D. Sharp, Laverne, Calif., assignor to MAP International, Wheaton, Ill.

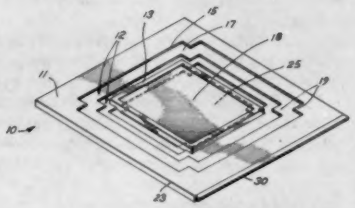
Filed Oct. 25, 1977, Ser. No. 844,806

Int. Cl.[2] G11B *1/00*

U.S. Cl. 250—468 **9 Claims**

1. A tray for film cassettes of the type having lateral surfaces and base surface, said tray comprising, in combination:

a plurality of cassette support tiers, each tier including fixed side support walls and an intersecting fixed base support ledge, said walls and ledge forming a plurality of fixed corner blocks which substantially engage said lateral surfaces and base surface of said cassette to restrain said



cassette in a substantially fixed position, whereby said tray restrains any of a plurality of different sized film cassettes.

4,162,408

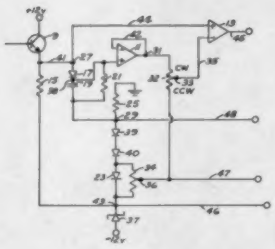
OPTICAL MARK SENSE DETECTOR

Emmert S. Hansen, Slater, Iowa, assignor to Bourns, Inc., Riverside, Calif.

Filed Oct. 17, 1977, Ser. No. 842,656

Int. Cl.[2] G06K *7/10*

U.S. Cl. 250—555 **10 Claims**



1. In a multichannel optical data detecting system in which detection is accomplished in each channel by comparing electromagnetic radiation introduced into optics in the absence of objects to be detected to that electromagnetic radiation introduced into optics when objects to be detected are encountered by said optics, the improvement in each channel comprising:

means for developing a first signal as a function of incident electromagnetic radiation upon a background field in the absence of said objects to be detected;

means for deriving second signals as a function of said first signal and the introduction into said optics of objects to be detected;

means to store and hold increases to said first signal;

means to prevent attenuation of said stored first signal;

high impedance input means responsive to said first signal and operative to furnish said first signal to subsequent circuitry so as to have negligible effect on said first signal;

threshold adjusting means furnishing a threshold level and responsive to said high impedance input means;

signal compensating means effective to cooperate in the control of said threshold adjusting means;

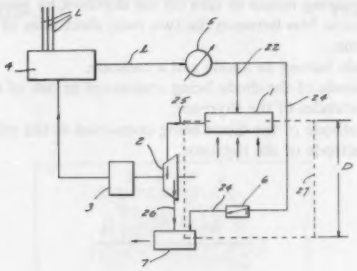
means for comparing said threshold level with signal level developed by the introduction of objects to be detected into said optics.

4,162,409

DEVICE FOR CONVERTING THE ENERGY OF SEA WATER

Ivan P. Nedyalkov, Sofia; Kancho T. Kanchev, Gabrovo, and Svetoslav R. Trenkov, Sofia, all of Bulgaria, assignors to CUV "Progress", Sofia, Bulgaria

Filed Jun. 8, 1977, Ser. No. 804,790
Claims priority, application Bulgaria, Jun. 8, 1976, 33402
Int. Cl.[2] F03B 13/10
U.S. Cl. 290—53 8 Claims



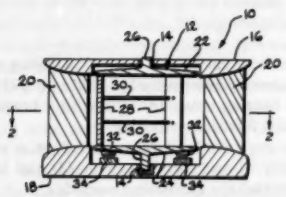
1. A device for converting the energy of sea waves into electrical energy, comprising a tank-like inlet converter for receiving sea water from the peaks of waves, a water-driven turbine connected to the inlet converter to be driven by the water discharged from the inlet converter, a tank-like outlet converter receiving spent water from the turbine and discharging it to the troughs of waves, an electrical generator driven by the turbine, at least one controllable outlet valve on the outlet converter, and a compressor for delivering air under variable, controlled pressure to said converters, the inlet and outlet valves being controlled by the pressure of air within the inlet and outlet converters, respectively.

4,162,410

VERTICAL-AXIS WINDMILL

James L. Amick, 1464 Cedar Bend Dr., Ann Arbor, Mich. 48105

Filed Nov. 30, 1977, Ser. No. 856,000
Int. Cl.[2] F03D 9/00
U.S. Cl. 290—55 6 Claims



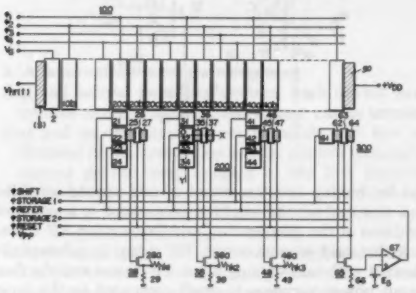
1. A vertical-axis windmill comprising a rotor having upper and lower disks in spaced relationship and three straight symmetrical airfoils fixedly attached to said upper and lower disks adjacent to the outer circumferences thereof, said airfoils being aligned circumferentially relative to said disks in equiangular relationship and with the leading and trailing edges of the airfoils equidistant from the axis of said disks, and a stator having upper and lower stationary supports of greater radial dimensions than said disks and defining axisymmetric surfaces in which said disks are recessed, said surfaces having a gap between them outward of said rotor that increases in a vertical direction with increasing distance from said rotor, and a ring of at least three straight vertical vanes of symmetric cross section connected to said stationary supports radially outward of said disks, said vanes being aligned radially relative to the axis of said rotor so as to define with said surfaces outward of said rotor venturi-like throats leading radially inward to said airfoils.

4,162,411

CHARGE TRANSFER ANALOG PROCESSING APPARATUS FOR SERIAL-TO-PARALLEL CONVERSION

Tatsuo Sakaue, Yokohama, and Mineo Iwasawa, Kanagawa, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed Jun. 3, 1977, Ser. No. 803,402
Claims priority, application Japan, Jun. 3, 1976, 51-64104
Int. Cl.[2] G11C 19/28; H01L 29/78; H03H 7/28
U.S. Cl. 307—221 D 4 Claims



1. A charge transfer analog signal processing apparatus for serial-to-parallel conversion, comprising:

a charge transfer device with a plurality of stages for shifting analog signal charge packets sampled in one direction;

transfer pulse supply means for supplying transfer pulses for a predetermined period of time to said charge transfer device and for shifting the signal charge packets along said charge transfer device;

pairs of first and second storage means each pair of which is coupled with said each stage of said charge transfer device, said first storage means being coupled with said corresponding and receiving the signal charge packets stored in said corresponding stages and storing the same therein, said first storage means then storing an amount of charge which subsequently increases with time during a storage period due to dark current charge, said second storage means coupled with said first storage means and receiving only the signal charge packets from said first storage means and storing the same which in turn are transferred to said first storage means after the dark current charge is exhausted from said first storage means;

means coupled with said first storage means for exhausting the dark current charge from said first storage means when said first storage means store only the dark current charge;

read-out means coupled with said first storage means for reading out the signal charge stored in said first storage means.

4,162,412

MICROWAVE POWER LIMITER COMPRISING A SINGLE-GATE FET

Daniel D. Mawhinney; Herbert J. Wolkstein, both of Livingston; Arye Rosen, Cherry Hill, all of N.J., and Zygmond Turski, Selden, N.Y., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 3, 1977, Ser. No. 838,656
Int. Cl.[2] H03G 11/04; H04B 3/04
U.S. Cl. 307—237 3 Claims

3. A power limiter for generating an output RF signal of

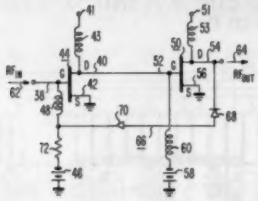
substantially constant power level in response to an input RF signal of varying power level, comprising:

a first multistage amplifier responsive to said input RF signal for generating a first output RF signal;

a second multistage amplifier responsive to said first output RF signal for generating a second output RF signal;

each of said first and second amplifiers including one or more field effect type transistors each having gate, drain and source electrodes, said transistors of each amplifier being connected in cascaded arrangement;

means for biasing said transistors of said first amplifier to produce a predetermined gain level of said first output RF signal;



means for biasing said transistors of said second amplifier such that said second amplifier is operated in a saturated condition at the gain level of said first output RF signal, such that said second output RF signal is substantially constant with said varying input RF power and the final output power variation is small compared to the input power variation; and

feedback circuit means between the gate electrode of a preceeding transistor and the drain electrode of a succeeding transistor of said second amplifier to provide a predetermined voltage to said preceeding transistor to reduce said final output power variation.

4,162,413

SEMICONDUCTOR SWITCH

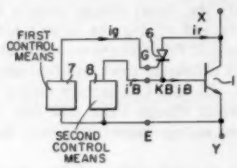
Masahiko Akamatsu, Amagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

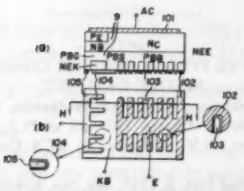
Continuation of Ser. No. 704,492, Jul. 12, 1976, abandoned. This application Oct. 19, 1977, Ser. No. 843,665

Claims priority, application Japan, Sep. 12, 1975, 50-111303

Int. Cl.[2] H03K *17/04, 17/56*

U.S. Cl. 307—253 **4 Claims**





1. A semiconductor switch comprising:

a transistor having a collector, an emitter and a base,

a thyristor having two main electrodes and a gate,

the main electrodes being connected in between the collector and the base of the transistor,

means for connecting the collector and the emitter of the transistor between an external power source and a load,

control means for applying a control signal to the gate of the thyristor,

means for supplying pulse current to the base of the transistor,

the pulse current being supplied to the base by the pulse supplying means to turn off the thyristor by generating a reverse bias between the two main electrodes of the thyristor,

a diode having an anode and a cathode,

the anode of the diode being connected to one of the main electrodes of the thyristor,

the cathode of the diode being connected to the other main electrode of the thyristor.

4,162,414

GENERATOR UNIT WITH BUILT-IN THERMALLY PROTECTED VOLTAGE REGULATOR

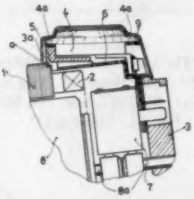
Yoshinobu Takabatake, Kariya, Japan, assignor to Nippondenso Co., Ltd., Aichi, Japan

Filed Apr. 13, 1977, Ser. No. 787,152

Claims priority, application Japan, Apr. 21, 1976, 51-50221[U]

Int. Cl.[2] H02K *11/00*

U.S. Cl. 310—68 R **3 Claims**



1. A generator unit for a vehicle comprising an alternating current generator having a shaft, a stator core (1) and a casing including a bearing cover (3) affixed to a bearing that holds said shaft, and further comprising:

a voltage regulator unit (4) mounted on a portion of the periphery of said bearing cover (3) and having a base member (4*a*) for facilitating mounting;

a frame member (3*a*) for supporting said regulator by its base member (4*a*) with reference to said bearing cover (3) and holding said regulator away from said stator core (1) in such a way that a free space gap (a) is provided between said stator core (1) and the said voltage regulator (4),;

an insulating plate (6) mounted on said frame member (3*a*) between said voltage regulator (4) and the interior of said casing in such a way as to leave a gap between said insulating plate (6) and said stator core (1) which communicates with said gap between said core (1) and said voltage regulator (4); and

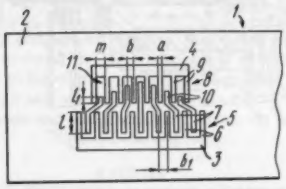
a cover (5) for said voltage regulator (4) fitting thereover outwardly from said bearing cover (3) and leaving a gap between itself and said core (1) so as to allow air to enter therethrough into said gap between said core and said voltage regulator.

4,162,415

ACOUSTIC SURFACE WAVE TRANSDUCER AND FILTER BUILT AROUND THIS TRANSDUCER

Anatoly S. Andreev; Alexandr S. Bagdasarian, both of Moskovskaya oblast; Jury V. Gulyaev, Moscow, and Anatoly M. Kmita, Moskovskaya oblast, all of U.S.S.R., assignors to Institut Radiotekhniki i Elektroniki Akademii Nauk SSSR, Moscow, U.S.S.R.

Filed Jul. 11, 1978, Ser. No. 923,547
Claims priority, application U.S.S.R., Jul. 22, 1977, 2510211
Int. Cl.[2] H01L *41/10*
U.S. Cl. 310—313 17 Claims



1. An acoustic surface wave interdigital transducer comprising:

a piezoelectric substrate;

a first contact area arranged on said piezoelectric substrate;

a second contact area arranged on said piezoelectric substrate;

a main row of electrodes having longitudinal axes, said row being arranged on said piezoelectric substrate and having a first group of said electrodes electrically connected to said first contact area and a second group of said electrodes in parallel to said electrodes of the first group and disposed therebetween so that overlapping portions of said electrodes of the same length are formed;

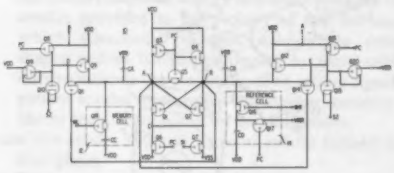
a first auxiliary row of electrodes, having longitudinal axes, arranged on said piezoelectric substrate between the main row of said electrodes and the second contact area; the first auxiliary row of said electrodes including a third group of said electrodes galvanically coupled to the second contact area, and a fourth group of said electrodes parallel to said electrodes of the third group connected directly to the corresponding electrodes of the second group of the main row and arranged between said electrodes of the third group so that at least a part of these have, with said electrodes of the third group, overlapping portions of a variable length; each electrode of the fourth group, together with the adjacent electrodes of the third group and the adjoining portions of the second contact area forming a capacitor which connects the corresponding electrodes of the second group of the main row to the second contact area, the capacitance of this capacitor being defined by a specified impulse response of the transducer; said electrodes of the third and fourth groups of the first auxiliary row being arranged so that the distances between said longitudinal axes of the adjacent electrodes of the third and fourth groups are selected so that they differ from the distances between said longitudinal axes of the adjacent electrodes of the first and second groups of the main row.

4,162,416

DYNAMIC SENSE-REFRESH DETECTOR AMPLIFIER

David Beecham, Coopersburg, and Howard C. Kirsch, Emmaus, both of Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jan. 16, 1978, Ser. No. 869,844
Int. Cl.[2] H03K *5/20, 3/286, 3/353;* G11C *7/06*
U.S. Cl. 307—362 8 Claims



1. A sense-refresh detector comprising:

first and second switching devices, each device having a control terminal and first and second output terminals;

first and second input/output terminals, the first output terminal of the first device and the control terminal of the second device being coupled to the first input/output terminal and the first output terminal of the second device and the control terminal of the first device being coupled to the second input/output terminal,

voltage equalization circuit means coupled to both input-/output terminals for essentially equalizing periodically the potentials of both input/output terminals;

first and second essentially identical load-refresh circuits, each load-refresh circuit comprising a capacitor circuit means having first and second terminals and third, fourth, and fifth switching devices each having a control terminal and first and second output terminals;

the control terminal of the third device of each load-refresh circuit being coupled to the first output terminal of the fourth device, the second output terminal of the fifth device, and the second terminal of the capacitor circuit means;

the second output terminals of the third and fourth devices being coupled together and being coupled to one input-/output terminal;

voltage setting circuit means being coupled to the second output terminals of the first and second devices for periodically setting the potential of said terminals to a preselected potential;

conductive enabling circuit means being coupled to the second output terminals of the first and second switching devices for periodically facilitating conduction through the first and/or second switching device;

being characterized in that:

the control terminal of the fourth device of the first load-refresh circuit is coupled to the second input/output terminal; and

the control terminal of the fourth device of the second load-refresh circuit is coupled to the first input/output terminal.

4,162,417

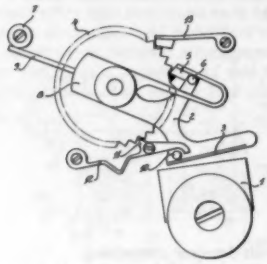
ELECTROMECHANICAL ESCAPEMENT

Richard Grudzinski, La Chaux-de-Fonds, Switzerland, assignor to Universo S.A., La Chaux-de-Fonds, Switzerland

Filed Oct. 4, 1977, Ser. No. 839,367
Claims priority, application Switzerland, May 2, 1977, 5451/77
Int. Cl.[2] H02K *7/06*
U.S. Cl. 310—21 5 Claims

1. Electromechanical escapement comprising an electromagnetic motor adapted to be controlled by an electric impulse of short duration, a toothed wheel, drive means for driving said toothed wheel in one direction, a magnetic member adapted to

be moved by said electromagnetic motor upon actuation of said motor, a spring for storing and releasing the kinetic energy of movement of said magnetic member, said spring driving said drive means, indexing means for preventing movement of said wheel in a direction opposite the direction in which the wheel



is driven by said drive means, locking means for preventing movement of said wheel in the direction in which said wheel is driven by said drive means except when said wheel is driven by said drive means, and means disabling said locking means when said drive means drives said wheel.

4,162,418

STEPPING MOTOR FOR ELECTRONIC CLOCK

Katsumi Kawaki, and Shinya Inabe, both of Kawasaki, Japan, assignors to Niles Parts Co., Ltd., Japan

Filed Apr. 28, 1977, Ser. No. 791,777

Claims priority, application Japan, Dec. 14, 1976, 51-167551[U]

Int. Cl.[2] H02H *37/17*

U.S. Cl. 310—49 R **1 Claim**

1. A stepping motor for an electronic clock comprising a motor coil for producing a magnetic force in response to a pulse current provided from a predetermined electronic circuit, a stator for conducting said magnetic force, and a rotor to be rotated by the action of said magnetic force conducted by said stator, said stator having two pairs of projecting portions and a pair of recess portions surrounding said rotor, said recess portions each having a recess formed therein, said rotor composed of a cylindrical permanent magnet having six magnetic poles equally divided with each other, said projecting portions and said recess portions respectively symmetrically located with respect to a rotor shaft, wherein one projecting portion of each pair of said projecting portions is respectively located within an angular range of 50° from a pole gap in a predetermined direction of rotation of said rotor, each one of said recess portions subsequently located with an angular range of 60° from the terminal end of the said one projecting portion in said predetermined direction as above, and the other of each pair of said projecting portions being respectively located within an angular range of 70° from the terminal end of said recess portion in said predetermined direction.

4,162,419

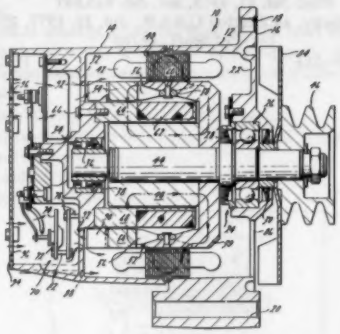
ALTERNATOR HAVING IMPROVED RECTIFIER COOLING

Larry E. DeAngelis, Northville, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 2, 1977, Ser. No. 856,696

Int. Cl.[2] H02K *1/22*

U.S. Cl. 310—266 **6 Claims**



1. An alternator having improved air cooling, which comprises:

a housing of substantially cylindrical shape, said housing having front and rear portions, said front portion being cup-shaped and having an end wall and said rear portion having an intermediate wall;

a rotor assembly comprising a shaft journalled for rotation about its axis, said shaft being located within said housing between said end wall of said housing front portion and said intermediate wall of said housing rear portion; a first ferromagnetic member attached to said shaft for rotation therewith; a second ferromagnetic member abutting said first member and attached to said shaft for rotation therewith, said second member being substantially cup-shaped, having pole fingers extending in a direction parallel with the axis of said shaft and defining an annular space between said first member and said pole fingers of said second member; a third ferromagnetic member mounted for rotation with said shaft, said third member having pole fingers interleaved with, but spaced from, the pole fingers of said second member; and a fan blade attached to said third member for rotation therewith, said fan blade being positioned between said third member and said intermediate wall of said housing rear portion;

an armature mounted within said housing radially outwardly of said rotor assembly;

a field coil positioned in said annular space between said first member and said pole fingers of said second member, said field coil being adapted to generate a magnetic field in said rotor assembly ferromagnetic members and in said armature; and

a rectifier assembly for rectifying alternating voltage generated in said armature, said rectifier assembly being located within said housing rear portion on the side of its intermediate wall opposite the side on which said rotor assembly is located.

4,162,420

X-RAY TUBE HAVING ROTATABLE AND RECIPROCABLE ANODE

John K. Grady, 277 Baker Ave., West Concord, Mass. 01781

Filed Jun. 5, 1978, Ser. No. 912,185

Int. Cl.[2] H01J *35/10*

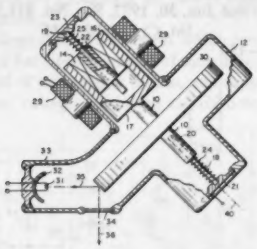
U.S. Cl. 313—60 **11 Claims**

1. An X-ray tube comprising:

an envelope enclosing an electron beam source including a

cathode for projecting electrons along a beam axis and including a window for X-rays to emerge;

an anode disc axially rotatable and reciprocatable and having its edge in the path of the beam axis, said edge being



parallel to the axis of the disc, said beam source being disposed to direct the electron beam at an acute angle of incidence to the edge to produce an X-ray that is transmitted through said window;

means to rotate and reciprocate said anode on its axis.

4,162,421

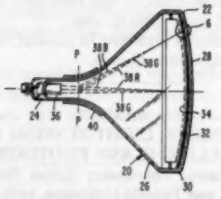
CATHODE RAY TUBE HAVING CORRUGATED SHADOW MASK WITH SLITS

Albert M. Morrell, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Division of Ser. No. 729,592, Oct. 4, 1976, Pat. No. 4,136,300, which is a continuation-in-part of Ser. No. 559,778, Mar. 29, 1975, abandoned. This application Oct. 7, 1977, Ser. No. 840,395

Int. Cl.² H01J *29/07*

U.S. Cl. 313—403 **8 Claims**



1. In a cathode-ray tube utilizing an apertured mask color selection technique, the improvement comprising,

an apertured mask having an array of parallel corrugations in an active apertured portion thereof and the center-to-center spacing of apertures in said mask varying with respect to variations in the mask-to-screen spacing in at least one direction across said mask,

said mask including a plurality of slit-shaped apertures aligned in columns and the spacing between the apertures and the screen varying in a cyclic manner in a direction perpendicular to the corrugations as a result of the corrugations.

4,162,422

COMPOSITE DIGITAL AND ANALOGUE FLUORESCENT DISPLAY PANEL DEVICE

Kiyoshi Morimoto, and Akira Harada, both of Mobara, Japan, assignors to Futaba Denshi Kogyo K.K., Chiba, Japan

Continuation of Ser. No. 737,168, Oct. 29, 1976, abandoned. This application Sep. 21, 1978, Ser. No. 944,350

Claims priority, application Japan, Oct. 31, 1975, 50-130542

Int. Cl.² H01J *63/02, 63/06*

U.S. Cl. 313—496 **4 Claims**

1. A flat plate type composition fluorescent display panel device comprising:

an insulating base plate;

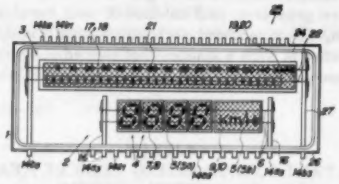
a digital display section formed on a portion of the surface of said base plate, said digital display section having a plurality of segment anodes which selectively perform digital display of multi-column characters, figures, symbols and the like by using said segment anodes;

an analog display section formed on another portion of the surface of said base plate adjacent said digital display section, said analog display section having a plurality of dot anodes disposed along a line and a plurality of pattern anodes provided in the vicinity of the dot anodes and which selectively performs substantially analog dot-shaped and/or bar-shaped display by using said dot anodes to indicate the amplitude of an analog signal and the pattern anodes to represent the number, quantity and the like of the display given by the dot anodes,

said dot anodes and said segment anodes formed in a common plane;

a fluorescent substance layer disposed on said segment anodes, said pattern anodes and said dot anodes for emitting light when bombarded with electrons;

cathode electrode means suspended over said segment anodes, said pattern anodes and said dot anodes for emitting electrons which bombard said fluorescent substance layer;



a wiring film layer disposed on the surface of said base plate between said base plate and said display sections for making electrical connection to said dot anodes, said pattern anodes, and said segment anodes;

an insulating layer disposed between said wiring film layer and said dot anodes, said pattern anodes, and said segment anodes for maintaining electrical isolation between adjacent dot anodes, adjacent pattern anodes and adjacent segment anodes;

a light transparent cover plate attached to said base plate for external viewing of said analog display and said digital display; and

an evacuated space between said cover plate and said base plate, said evacuated space enabling electrons emitted from said cathode electrode means to travel relatively unimpeded to said segment anodes, said pattern anodes, and said dot anodes respectively;

whereby said wiring film layer, said insulating layer, said dot anodes, said pattern anodes, and said segment anodes, and said fluorescent layer are produced in a laminated manner, thereby providing an integrated analog and digital fluorescent display panel device.

4,162,423

LINEAR ACCELERATORS OF CHARGED PARTICLES

Duc T. Tran, Buc, France, assignor to C.G.R. MeV, Buc, France

Filed Dec. 9, 1977, Ser. No. 859,193

Claims priority, application France, Dec. 14, 1976, 76 37625

Int. Cl.² H01J *25/10*

U.S. Cl. 315—5.41 **7 Claims**

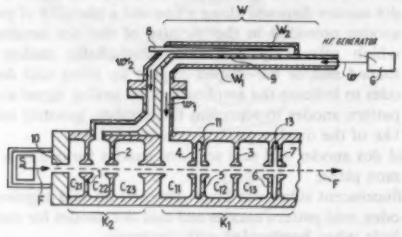
1. A linear accelerator for accelerating charged particles comprising:

a particle source;

an accelerating structure including a bunching section and an accelerating section, each respectively constituted by a plurality of resonant cavities electromagnetically coupled

to one another and provided, at their center with an orifice to pass said particles;

means for injecting a microwave signal emitted by a microwave generator into said accelerating structure, said injecting means comprising a combined coupler and phase-shifter system which enables a microwave signal w_1 of determined amplitude and phase to be injected into said



accelerating section and, simultaneously, a microwave signal w_2 of determined amplitude and to be injected into said bunching section, said two microwave signals w_1 and w_2 being obtained from a signal w issued from said microwave generator; said cavities of said bunching section being determined and electromechanically coupled to one another in such a manner that two adjacent cavities are phase-shifted by π, one with respect to the other.

4,162,424

LOAD TRIM COMPENSATING VEHICLE HEADLIGHT DEFLECTION SYSTEM

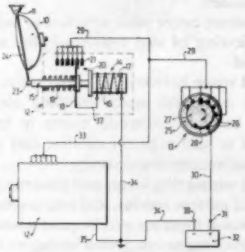
Ulrich Zillgitt, Stuttgart; Wolfgang Kuhn, Waiblingen, and Günther Doll, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Aug. 22, 1977, Ser. No. 826,703

Claims priority, application Fed. Rep. of Germany, Sep. 1, 1976, 2639263

Int. Cl.² B60Q *1/02*

U.S. Cl. 315—82 **12 Claims**



1. A load compensating headlight directing system for a vehicle comprising:

a vertical plane directional positioning member for each headlight, and

a command transmitter for applying electrical potential to one or more of a plurality of electrical conductors collectively representative of an angular position order for said positioning member,

said positioning member (12,62) having a positioning drive device constituted so as to be responsive to angular position orders provided on said conductors and also so constituted on account of the inertia of the moving parts thereof, to shut itself off automatically after responding to an angular position order.

4,162,425

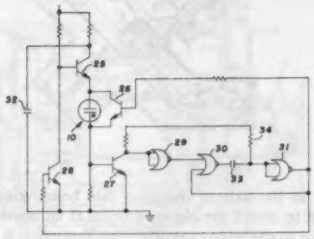
ULTRAVIOLET DETECTION TUBE QUENCHING CIRCUITRY

Theodore E. Larsen, Edina, and James M. Celt, Mounds View, both of Minn., assignors to Detector Electronics Corporation, Minneapolis, Minn.

Filed Jun. 30, 1977, Ser. No. 811,573

Int. Cl.² G01J *1/46*

U.S. Cl. 315—150 **4 Claims**



1. Circuitry for the rapid de-ionization of ionized gas within a gas filled, ultraviolet detection tube, said circuitry including:

a. an ultraviolet detection, gas filled tube having at least a pair of electrodes, a first electrode thereof being connected to a source of power, a second electrode thereof being connected to a signal receiver current flowing from said first to said second electrode upon the ionization of the gas within the tube as a result of ultraviolet radiation thereof to deliver a signal to the receiver;

b. switching means being arranged between the source of power and the tube and being responsive to the signal generated by the tube, said switching means being normally closed but opening in response to a received signal to limit current flow to the tube and thereby limit the ionization of gases therein; and,

c. a charging circuit arranged in parallel with the tube and including a capacitor therein.

4,162,426

ZONE RESPONSIVE, LIGHT-SENSING CIRCUIT FOR CONTROLLING FLASH PHOTOGRAPHING

Tokuichi Tsunekawa, Yokohama; Zenzo Nakamura, Urawa; Osamu Okubo, and Takashi Uchiyama, both of Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 615,363, Sep. 22, 1975, abandoned. This application Dec. 21, 1977, Ser. No. 862,672

Claims priority, application Japan, Sep. 25, 1974, 49-110101

Int. Cl.² H05B *41/32*

U.S. Cl. 315—151 **8 Claims**

1. A flash device comprising:

flash energy supply means for supplying flash energy;

flash means connected with said flash energy supply means to cause flash emission by the flash energy supplied from said flash energy supply means;

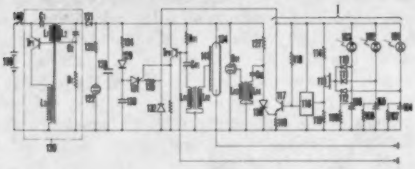
a plurality of light amount integrating circuits, each of said light amount integrating circuits having a light sensitive means, and producing an output corresponding to the amount of light incident upon each of said circuits;

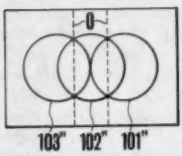
said plurality of light amount integrating circuits including a first light amount integrating circuit which measures a middle photometric zone and second and third light amount integrating circuits which measure photometric zones on both sides of a picture being photographed, photometric zone regulating means optically connected with said light amount integrating circuit, for transmitting light flux emitted at said middle photometric zone toward said light sensitive means to a first light amount integrating circuit, and for transmitting a light flux emitted at said side photometric zones toward said light sensitive means

to second and third light amount integrating circuits, each of the side photometric zones measured by the second and third integrating circuits being arranged to overlap the middle photometric zone measured by the first integrating circuit;

a trigger circuit for producing an output signal to trigger said flash means;

a constant voltage producing circuit which produces a constant voltage for a preset period of time in response to the output signal of said trigger circuit, an output terminal of said constant voltage producing circuit being connected





to said plurality of light amount integrating circuits to impress a constant voltage on said integrating circuits;

flash stop signal generating means coupled to said integrating circuits and adapted to provide a flash stop signal in response to the output of the one of said plurality of integrating circuits which first reaches a predetermined value: and

a control circuit connected with said flash means and said generating means and being adapted to stop emission of the flash of said flash means in response to said flash stopping signal.

4,162,427

GAS-DISCHARGE DISPLAY PANEL

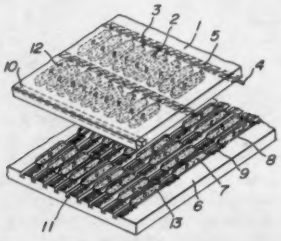
Takeo Kamegaya, Tokyo; Minori Yokozawa, Sagamihara; Ryuichi Kaneko, Kawasaki, and Hideomi Matsuzaki, Hatano, all of Japan, assignors to Nippon Hoso Kyokai, Japan

Filed Mar. 13, 1978, Ser. No. 885,947

Claims priority, application Japan, Mar. 18, 1977, 52-29340; Jul. 7, 1977, 52-80381

Int. Cl.[2] H05B *37/00, 39/00, 41/00*

U.S. Cl. 315—169.1 **13 Claims**



1. In a gas-discharge display panel, wherein a plurality of gas-discharge cells are arranged in a matrix, the improvement comprising:

a transparent front insulator plate;

a rear insulator plate attached to said front insulator plate;

a plurality of minute elongated recesses provided at least on one of the inner faces of said front and rear insulator plates for forming a matrix of said gas-discharge cells located between said front and rear insulator plates;

an ionizable gas provided in said gas-discharge cells;

a plurality of pairs of elongated anode conductors and elongated cathode conductors disposed respectively in parallel with each other on opposite side elongated edges of said elongated recesses and separated by a minute distance; and

a train of narrow width pulsive voltages applied between each of said pairs of elongated anode conductors and elongated cathode conductors at predetermined time intervals, said narrow width pulsive voltages being of a pulse width sufficient to cause main gas-discharges in said discharge cells consisting of sustained anode glows and cathode glows which appear closely adjacent respective anode and negative conductors.

4,162,428

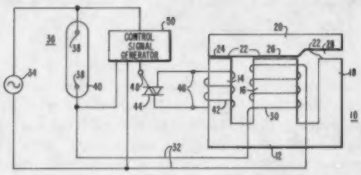
VARIABLE INDUCTANCE BALLAST APPARATUS FOR HID LAMP

Robert T. Elms, Monroeville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 29, 1978, Ser. No. 920,291

Int. Cl.[2] H05B *41/36*

U.S. Cl. 315—284 **4 Claims**



1. A variable inductance apparatus for ballasting a high-intensity discharge lamp, said apparatus comprising:

a. a laminated iron core member having an E-I configuration wherein the E-conformed part thereof comprises a main leg member having three transverse leg members connected thereto proximate the ends and mid-portion thereof and projecting at right angles therefrom; the I-conformed part of said core member having dimensions similar to said main leg member and positioned as a yoke proximate the projecting ends of said transverse leg members; and non-magnetic gaps having predetermined spacings provided intermediate said yoke member and at least two of the proximate projecting ends of said transverse leg members;

b. a main winding having a predetermined number of turns wrapped about one of said transverse leg members; means for connecting said main winding in series circuit relationship with an AC energizing source and said high-intensity discharge lamp to be ballasted; and said main winding and said core member coacting to provide two closed magnetic paths;

c. a control winding wrapped about a leg member of said core member other than the said leg member about which said main winding is wrapped and said control winding also encircling the flux path of only one of said closed magnetic paths which are formed by said core member and said main winding; and

d. bilateral switch means having output terminals and a control terminal, said switch means having a closed state in which conduction therethrough is provided at said output terminals, and said switch means having an open

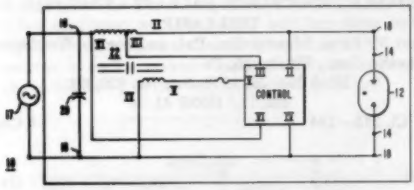
state in which an open circuit is provided at said output terminals, and said control terminal is adapted to receive an actuating signal to control the conducting state of said switch means; said control winding connected to the control terminal of said switch means to actuate and switch means to a closed state at a predetermined time in each half cycle of energizing potential for said HID lamp as normally operated; whereby on closing of said switch means the resulting counter mmf generated in one of said closed magnetic paths of said core member decreases by a predetermined amount the inductance of said apparatus to control in a predetermined fashion the average power delivered to said HID lamp.

4,162,429

BALLAST CIRCUIT FOR ACCURATELY REGULATING HID LAMP WATTAGE

Robert T. Elms, and Joseph C. Engel, both of Monroeville, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 776,804, Mar. 11, 1977, abandoned. This application Jun. 29, 1978, Ser. No. 920,581
Int. Cl.[2] H05B *41/36*
U.S. Cl. 315—284 **4 Claims**



1. In combination, an operating circuit for controlling at about a predetermined nominal rated value the wattage drawn by a high-intensity-discharge lamp means during normal operation thereof and for limiting the line current drawn by said lamp means during starting thereof to less than the line current drawn by said lamp means during normal operation thereof, and said lamp means having lamp terminals and a nominal rated operating voltage and current, said circuit comprising:

a. input terminals adapted to be connected to an AC line voltage source having a predetermined nominal rating, and output terminals adapted to be connected to the terminals of said lamp means;

b. current controlling means in circuit intermediate said input terminals and said output terminals, said current controlling means having a first operating mode in which a current less than said lamp means nominal operating current is passed to said output terminals and through said lamp means as connected thereacross, said current controlling means also having a second operating mode in which a current greater than said lamp means nominal operating current is passed to said output terminals and through said lamp means as connected thereacross, and the ratio of the magnitude of current passed to said output terminals and said lamp means in said second mode to the magnitude of current passed to said output terminals and said lamp means in said first mode being less than 2:1;

c. switch means operable to switch said current controlling means between said two operating modes thereof during each half cycle of said AC line voltage, said switch means comprising a gate-controlled AC switch, and ramp capacitor means of predetermined rating in circuit with the gate of said AC switch means and operable to effect the gating of said AC switch means when a predetermined voltage signal is developed across said ramp capacitor means;

d. line voltage sensing means for measuring the magnitude of said AC line voltage and generating a first current signal the magnitude of which is indicative of the deviation of line voltage from nominal, and said first current signal feeding into said ramp capacitor means during each half cycle of said AC line voltage;

e. lamp voltage sensing means for measuring the voltage drop across said lamp means both during lamp startup when the voltage drop thereacross is relatively small and also during normal lamp operation and generating a second current signal the magnitude of which is indicative of the deviation of operating lamp voltage from nominal, and said second current signal also feeding into said ramp capacitor means during each half cycle of said AC line voltage;

f. means for discharging said ramp capacitor means to a predetermined potential at a predetermined time in each half cycle of said AC line voltage, and said ramp capacitor means thereafter being charged in the same half cycle, with the time interval in each half cycle of said AC line voltage which is required to develop said AC switch gating signal being determined by the cumulative charge delivered thereto by said first current signal and said second current signal; and

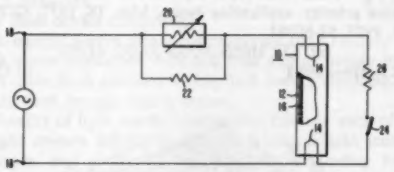
g. during startup of said lamp means, said second current signal having minimal value due to the low voltage drop across said lamp means to provide at most only a slow voltage variation in the charge on said ramp capacitor means and to maintain said current controlling means in said first mode for at least the substantial portion of each half cycle of said AC line voltage, and after said lamp means is operating normally with approximately nominal voltage drop thereacross, the predetermined capacitance of said ramp capacitor means coupled with the cumulative charge delivered thereto by said first current signal and said second current signal coupled with the relatively small ratio of current passed by said current controlling means in said second mode to current passed by said current controlling means in said first mode providing a stable and accurate control of wattage drawn by said normally operating lamp means.

4,162,430

COMPACT BALLAST FOR FLUORESCENT LAMP WHICH PROVIDES EXCELLENT LAMP POWER REGULATION

Laurence H. Cadoff, Wilkins Township, Allegheny County; Douglas M. Mattox, O'Hara Township, Allegheny County, and Robert T. Elms, Monroeville, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 30, 1978, Ser. No. 910,814
Int. Cl.[2] H05B *41/16*
U.S. Cl. 315—309 **6 Claims**



1. In combination, a circuit for operating a low-pressure, positive-column, mercury-vapor discharge lamp which is adapted to be operated with a predetermined AC rms voltage drop thereacross and a predetermined rms current therethrough to establish a predetermined rated power consumption therein, said discharge lamp requiring a starting voltage which exceeds said operating voltage by at least a predetermined amount, and said lamp also requiring for continuing operation the application of a reignition voltage thereacross at the beginning of each half cycle of said lamp operating voltage, which

reignition voltage exceeds said lamp operating voltage by at least a predetermined amount, said circuit comprising:

a. input terminals adapted to be connected to a predetermined AC rms line voltage which is from about 120% to about 150% of said predetermined lamp rms operating voltage;

b. ballast means connected in series with said lamp to be operated, said series-connected ballast means and said lamp adapted to be connected across said input terminals, said ballast means comprising a parallel-connected positive temperature coefficient (PTC) resistor and a fixed value resistor, and the relative values of said PTC resistor and said fixed value resistor displaying the following relationships with respect to one another and with respect to said lamp to be operated:

(i) the room temperature ohmic resistance of said PTC resistor is from about one-third of about twice the ohmic resistance of said fixed value resistor,

(ii) the ohmic resistance of said fixed value resistor is sufficiently low to sustain a discharge in said lamp, and

(iii) the rms voltage drop across said ballast means during operation of said ballasted lamp is at least about twenty percent of said rms lamp operating voltage to provide for adequate starting voltage for said lamp as well as providing adequate reignition voltage for said lamp at the beginning of each half cycle of said lamp operating potential;

c. said PTC resistor displaying a curve of temperature vs. resistance which breaks and rises sharply after a predetermined PTC resistor transition temperature is reached; and

d. heat sink means associated with said PTC resistor to cause the resistance of said PTC resistor to be maintained during lamp operation at about said transition temperature and with a relatively constant power dissipation therein within the range of from about one-third to about one-tenth of said lamp rated power consumption, and said PTC resistor and said fixed value resistor being substantially thermally insulated from one another.

4,162,431

METHOD AND APPARATUS FOR CONTROLLING THE EROSION OF ARC PRODUCING ELECTRODES

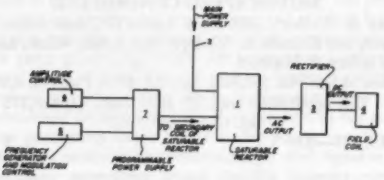
Allen P. George, Norton; Harold Homer, Hartlepool, and Christopher J. Richardson, Guisborough, all of England, assignors to Tioxide Group Limited, Billingham, England

Filed Aug. 15, 1977, Ser. No. 824,660

Claims priority, application United Kingdom, Sep. 2, 1976, 26502/76

Int. Cl.² H05B *41/16*; H05H *1/26*

U.S. Cl. 315—346 **12 Claims**



1. Apparatus for prolonging the life of least one electrode of two or more electrodes between which an arc is sustained comprising:

a field coil surrounding that part of the electrode whereon the arc foot is formed;

a system for supplying direct current to the field coil; and

a current oscillator, the output of the current oscillator and the direct current supply system being interconnected in such a manner that the current to the field coil can be oscillated at a frequency in the range 5×10^{-1} to 1×10^{-4} Hz.

4,162,432

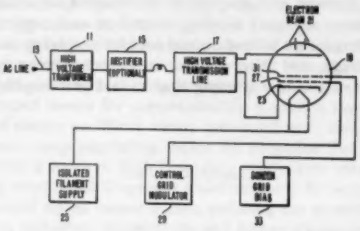
REPETITIVELY PUMPED ELECTRON BEAM DEVICE

Leland G. Schlitt, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 11, 1978, Ser. No. 868,638

Int. Cl.² H01S *3/09*

U.S. Cl. 315—349 **11 Claims**



1. Apparatus for producing repetitive pulses of electrons in an excitable medium, the apparatus comprising:

a source of electrons;

a cathode connected to the source of electrons;

an anode, spaced apart from the cathode, for accelerating the electrons from the cathode in response to an electric potential difference between cathode and anode;

a transmission line of predetermined length, operatively associated with the cathode, for storage of current pulses of at least 0.25 MeV;

insulator means, connected to one end of the transmission line and to the anode, for maintaining an electric potential difference between the cathode and the anode for periods of time greater than ten microseconds and for permitting the gun to operate at high vacuum; and

pulse producing means, operatively associated with the anode, for producing a sequence of at least two electric potential pulses with pulse repetition rates of 10^4–10^6 Hz at the anode so as to cause a sequence of at least two pulses of electrons to move from cathode to anode.

4,162,433

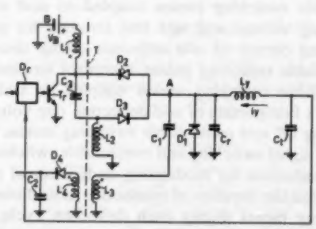
CIRCUIT ARRANGEMENT INCLUDING A LINE DEFLECTION CIRCUIT

Johannes S. A. van Hattum; Engelbertus S. P. van Veen, and Wilhelmus M. Dorn, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 670,875, Mar. 26, 1976, abandoned, which is a continuation of Ser. No. 473,771, May 28, 1974, abandoned. This application Jul. 19, 1977, Ser. No. 816,958

Int. Cl.² H01J *29/70*

U.S. Cl. 315—411 **16 Claims**



1. A circuit arrangement comprising a line deflection circuit means for generating a line frequency sawtooth-shaped deflection current through a line deflection coil and a voltage supply circuit switching at the line frequency, the line deflection

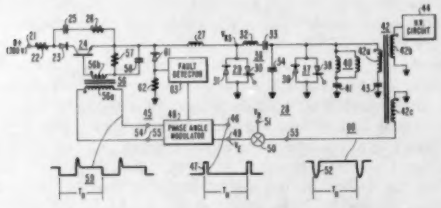
circuit comprising a transformer having a magnetic material core, a trace capacitor coupled to said transformer, a retrace capacitor coupled to said transformer, and a first line frequency-controllable switch coupled to said transformer, the voltage supply circuit comprising a first winding of an inductive element wound on said core, a supply diode coupled between said element and the line deflection circuit and a second controllable switch having a variable duty cycle and coupled to said inductive element and adapted to be coupled to a voltage supply source; a second winding wound on said core, and a third winding means wound on said core for supplying another supply voltage, said third winding means being more tightly coupled to said second winding than to said first winding.

4,162,434

REGULATOR WITH SHORT CIRCUIT PROTECTION

Wolfgang F. W. Dietz, New Hope, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Nov. 7, 1977, Ser. No. 849,221
Int. Cl.[2] H01J *29/70*
U.S. Cl. 315—411 **20 Claims**



1. A regulated deflection circuit, comprising:

a deflection winding;

a deflection circuit coupled to said deflection winding for producing scanning current in said deflection winding, a first terminal of said deflection circuit having developed thereat a deflection rate voltage;

a source of operating voltage for supplying energy to said deflection circuit;

first sensing means coupled to a source of voltage representative of an energy level in said deflection circuit for producing an error signal;

control means responsive to said error signal for providing first and second control signals; and

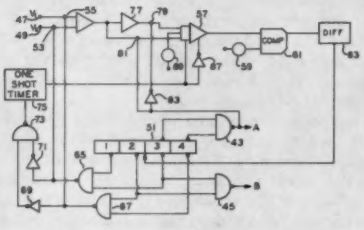
controllable switching means coupled to said source of operating voltage and said first terminal for providing operating current to said deflection circuit through said controllable switching means, a control terminal of said controllable switching means coupled to said control means, a first portion of said deflection rate voltage commutating off said controllable switching means, said first control signal switching said controllable switching means into conduction for modulating under normal operating conditions the duration of conduction of said controllable switching means during each deflection cycle, thereby regulating the supply of energy coupled to said deflection circuit, said second control signal turning off said controllable switching means under fault conditions when said deflection rate voltage fails to commutate off said controllable switching means prior to the occurrence of said second control signal.

4,162,435

METHOD AND APPARATUS FOR ELECTRONICALLY COMMUTATING A DIRECT CURRENT MOTOR WITHOUT POSITION SENSORS

Floyd H. Wright, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Oct. 5, 1976, Ser. No. 729,804
Int. Cl.[2] H02K *29/00*; H02P *7/00*
U.S. Cl. 318—138 **13 Claims**



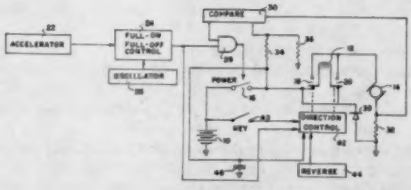
1. The method of providing commutating signals for a brushless direct current motor having a stationary armature with a longitudinal axis, a plurality of stator windings disposed in the armature to produce magnetic fields in response to selective winding energization, and a permanent magnet rotor adapted to rotate about the longitudinal axis in response to magnetic fields established by the selective winding energization comprising sequentially repeating the steps of: energizing at least one of the plurality of stator windings; selecting an unenergized winding which is another one of the plurality of windings available for energization for causing rotational movement of the permanent magnet rotor; sampling the induced voltage across the selected unenergized winding during a sampling interval; integrating the induced voltage during the sampling interval for developing a voltage integral with the integrating being initiated from a preselected initial integral value; comparing the voltage integral to a predetermined reference voltage level which is indicative of a predetermined relative angular position of the permanent magnet rotor; and returning the voltage integral to the initial value whereby integration of induced voltage of another unenergized winding may be subsequently performed and energizing another winding when the voltage integral exceeds the reference voltage level thereby providing selective commutation of the motor windings independently of rotor speed and in accordance with the relative position of the permanent magnet rotor.

4,162,436

MOTOR SPEED CONTROLLER

Lindsey E. Waldorf, 3888 Loch Alpine Dr., Ann Arbor, Mich. 48103, and Kenneth E. Monroe, Ann Arbor, Mich., assignors to Lindsey E. Waldorf

Division of Ser. No. 570,628, Apr. 23, 1975, Pat. No. 4,066,934. This application Aug. 29, 1977, Ser. No. 828,275
Int. Cl.[2] H02P *5/00*
U.S. Cl. 318—139 **3 Claims**



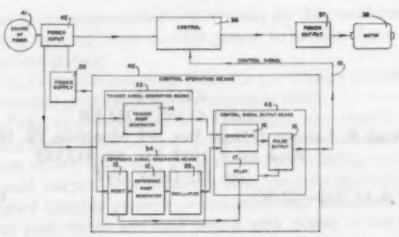
1. In a control system for an electrically powered vehicle having a battery, an electric drive motor and a switching

device connected in series with said battery and said drive motor, a speed control comprising: an operator controlled accelerator having an output which varies continuously between a pair of limits; a multi-vibrator including a pair of triggerable one-shot bi-stable devices with the output of one of such devices connecting to the triggering input of the other such device, said multivibrator being connected to receive the output of the accelerator, the output of the multi-vibrator reciprocating between two states, the ratio of "on" time to "off" time varying as a function of the output of the accelerator from 100% on time at one extreme of the continuous range of the accelerator output to 100% off time at the other end of the continuous range of the accelerator; and circuit means for causing closure of said switching device at such time as the multivibrator output is in its on state.

4,162,437
MOTOR ACCELERATION AND STARTING TORQUE CONTROL

James D. Keith, Port of Spain, Trinidad and Tobago, and Bruce E. Gray, York, Pa., assignors to Incom International, Pittsburgh, Pa.

Filed Aug. 27, 1976, Ser. No. 718,128
Int. Cl.[2] H02H 7/08
U.S. Cl. 318—410 **9 Claims**

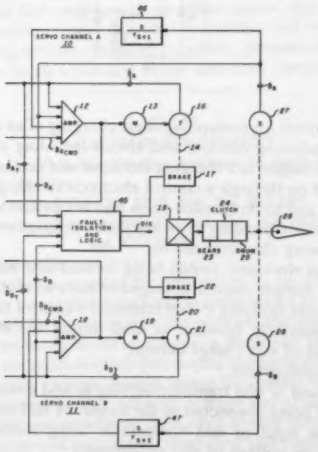


1. The motor acceleration and starting torque control apparatus comprising multiple phase power input means for connection to a single phase or three phase source of power, power output means for connection to a motor, control means connected to the power input means and power output means for communicating power from the power input means to the power output means thereby supplying power to the power output means, a power supply connected to the power input means for supplying D.C. power, control operating means connected to the power supply means and control means for regulating the control means independently of instantaneous motor parameters thereby controlling power supplied to the power output means and to a motor connected to the power output means and governing acceleration and starting torque of the motor, wherein the control operating means comprise reference ramp generating means for generating a reference ramp signal, independent of motor current feedback, wherein the reference ramp generating means further comprises reset means connected to the power input means and to the reference ramp generating means for detecting power supplied to the power input means and communicating a reset signal to the reference ramp generating means thereby insuring proper activation of the reference ramp generating means, a starting torque adjusting potentiometer for adjusting desired starting torque and an acceleration adjusting potentiometer for adjusting the desired acceleration of a motor connected to the power output means, an integrating means, said integrating means comprising a pair of transistors connected in Darlington rrangement with the emitter of the first stage transistor connected to circuit common through a resistor, the emitter of the second stage transistor connected directly to circuit common, the collectors of both transistors connected to the cathode of a diode having its anode connected through a resistor and the starting torque adjusting potentiometer in series to a junction between a zener diode and resistor in the power supply means and to the base of the first stage transistor through a capacitor, the base of the first stage transistor further connected to circuit common through a resistor and the acceleration adjusting potentiometer in series and to the cathode of a diode having its anode connected to the output of an operational amplifier in the reset means, trigger signal generating means connected to the power input means, the trigger signal generating means comprising trigger ramp generating means for generating a repetitive ramp waveform trigger signal, the trigger ramp generating means and the reference ramp generating means comprising means for generating ramps of opposite slope, and control signal output means connected to the reference ramp generating means, to the trigger signal generating means and to the control means for communicating a control signal to the control means, oscillator means connected to an output of the reference ramp generating means for chopping the reference ramp into a series of high frequency oscillations thereby permitting small, high frequency transformers to be connected to the control signal output means, reducing the overall weight, volume, operating temperature and power dissipation of the circuit, the control signal output means comprising comparator means connected to the reference ramp generating means and to the trigger ramp generating means for comparing the trigger ramp signal from the trigger ramp generating means with the reference ramp signal from the reference ramp generating means, the control signal output means further comprising pulse output means connected to the comparator means and the control means for applying to the control means pulses having a pulsewidths that increase with time to regulate the control means and the supply of power to output means thereby regulating the power supplied to the motor connected to the power output means and allowing smooth acceleration of the motor from start to full rated speed, and means connected to the reset means and pulse output means for communicating an activating signal from the reset means to the pulse output means sufficiently delayed to permit time for transient signals generated by the reset means to stabilize before activating the pulse output means.

4,162,438
DUAL SERVO AUTOMATIC PILOT WITH IMPROVED FAILURE MONITORING

Stephen S. Osder, Scottsdale, Ariz., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Mar. 27, 1978, Ser. No. 890,745
Int. Cl.[2] G05B 9/02
U.S. Cl. 318—564 **13 Claims**



1. A dual channel servo control system for aircraft automatic

pilots for positioning a control surface in accordance with an input command signal comprising

first and second substantially identical servomotor channels responsive to said input command signal and including corresponding first and second servomotors each normally providing substantially identical first and second output motions in response to said command signal, each of said channels further including corresponding first and second tachometers for supplying first and second signals proportional to the velocity of its corresponding servomotor,

differential means responsive to said first and second servomotor outputs and having an output coupled to position said control surface,

feedback means responsive to said differential output for supplying first and second rate feedback signals to said first and second channels, respectively, such that upon failure of one of said channels said first and second tachometers supply servomotor velocity signals having a differential value that is large compared with the motion of said control surface, and

monitoring means responsive to said first and second servomotor velocity signals for disabling the operation of said failed channel, said monitoring means having a failure detection threshold dependent at least in part upon a predetermined value of the difference between said first and second servomotor velocity signals.

4,162,439

RAPID-CHARGING CIRCUIT

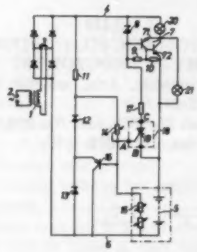
Arthur Schneider, Völkenrode, Fed. Rep. of Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Fed. Rep. of Germany

Filed Jun. 29, 1977, Ser. No. 811,058

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1976, 2634863

Int. Cl.² H02J *7/10*

U.S. Cl. 320—40 **2 Claims**



1. A circuit for controlling rapid charging of an accumulator with a pulsating current, said circuit including an electronic switch arranged in a charging circuit of said accumulator to be switched on through a control electrode to charge said accumulator and to be blocked upon said accumulator reaching a voltage corresponding to an adjustable reference voltage, said circuit being characterized by:

(a) said electronic switch being formed as a transistor;

(b) an emitter resistor arranged relative to said transistor;

(c) means applying to said transistor a control voltage that is substantially constant at least during the duration of a pulse of said charge current;

(d) a comparator;

(e) a base of said transistor serving as said control electrode and being connected to the output of said comparator;

(f) one input of said comparator being connected to the charge voltage of said accumulator;

(g) another input of said comparator being connected to said reference voltage so that the output of said comparator assumes a potential that blocks said transistor when said charge voltage exceeds said reference voltage;

(h) two feed conductors connected to said accumulator;

(i) a first one of said conductors having a high potential and a second one of said conductors having a low potential;

(j) a potentiometer arranged to provide said reference voltage;

(k) a resistor connected in series with said potentiometer;

(l) said resistor having a negative temperature coefficient and being arranged in thermal communication with said accumulator;

(m) a constant voltage source arranged in parallel with said potentiometer and said resistor;

(n) said constant voltage source being formed as a series connection of two zener diodes connected to said feed conductors;

(o) a cathode of a first one of said zener diodes being connected with said potentiometer;

(p) an anode of a second one of said zener diodes being connected with said resistor; and

(q) a pnp transistor arranged in parallel with said second zener diode and having a base connected to a junction between said potentiometer and said resistor.

4,162,440

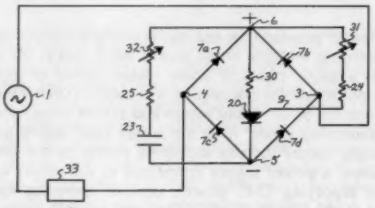
LIMIT CONTROLLER

Frank K. Luteran, R.D.#1 Box 387, Montdale, Pa. 18447

Filed Jul. 8, 1977, Ser. No. 813,943

Int. Cl.² G05F *1/44*

U.S. Cl. 323—22 SC **12 Claims**



1. A circuit for regulating current flow from an alternating voltage, through a load, which comprises;

a. a diode bridge having first and second input terminals and first and second bridge terminals, the alternating voltage connected to the input terminals and producing positive voltage pulses at the first bridge terminal and negative voltage pulses at the second bridge terminal;

b. a control element connected in series with the bridge terminals, the control element having a control input;

c. a first control connected to the control input and the first bridge terminal capable of conducting a signal into the control input thereby making the control element conductive;

d. energy storage means storing DC energy for conduction through the control element, a first side of the storage means connected to the second bridge terminal;

e. a second control serially connected to a second side of the energy storage means and the first bridge terminal and capable of conducting DC energy from the storage means to the bridge and maintaining conduction of the control element, the energy storage means and the second control connected in parallel relationship with the first and second bridge terminals.

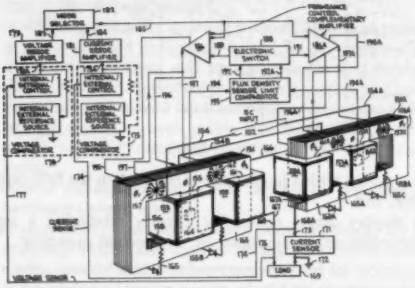
4,162,441
APPARATUS FOR CONTROL OF DC POWER BY ELECTROMAGNETIC INDUCTION

Nathan A. Moerman, 7310 Maple Ave., Chevy Chase, Md. 20015

Division of Ser. No. 762,896, Jan. 26, 1977, Pat. No. 4,112,347, which is a division of Ser. No. 635,007, Nov. 25, 1975, Pat. No. 4,020,440. This application Nov. 7, 1977, Ser. No. 848,979

Int. Cl.[2] G05F *1/22, 7/00*

U.S. Cl. 323—57 **2 Claims**



1. In an electromagnetic induction means for the transformation of one form of direct current power to another form of direct current power:

a first and a second identical means for providing a plurality of variable permeance closed magnetic paths;

each of said identical means having an input path means, an output path means, a bypass path means, an input winding means on said input path means, an output winding means on said output path means, a first electromagnetically coupled variable permeance control means between said input path means and said output path means, a second electromagnetically coupled variable permeance control means between said input path means and said bypass path means,

a pair of direct current source terminal means,

a means connecting said first and second input winding means in series with said pair of direct current source terminal means,

a current sensing means,

a first and a second output terminal means,

a means connecting said first output terminal means, said first and second output winding means, said current sensing means and said second output terminal means in series aiding configuration,

a first, second, third and fourth reverse transient suppression means, each having a winding means, a unidirectional current flow and energy absorbing means and means connecting said winding means to said flow and absorbing means,

said first suppression means surrounding said bypass path means of said first identical means,

said second suppression means surrounding said output path means of said first identical means,

said third suppression means surrounding said bypass path means of said second identical means,

said fourth suppression means surrounding said output path means of said second identical means,

a first voltage comparator means having a reference voltage means and an output voltage setting means producing a voltage error output signal,

a voltage feedback means connecting said first output terminal means and said first voltage comparator means,

a second voltage comparator means having a reference voltage means and an output current setting means producing a current error output signal,

a current feedback means connecting said second output terminal means and said second voltage comparator means,

an operating mode selector means,

a means connecting the voltage error signal output of said first voltage comparator means as a first input to said operating mode selector means,

a means connecting the current error signal output of said second voltage comparator means as a second input to said operating mode selector means,

a first and a second complementary control amplifier means,

a means connecting the output of said operating mode selector means as the first input to both of said amplifier means,

means connecting the complementary control outputs of said first amplifier means to said first and second variable permeance control means in said first identical means,

means connecting the complementary control outputs of said second amplifier means to said first and second variable permeance control means in said second identical means,

a first flux density sensing means magnetically coupled to said input path means of said first identical means,

a second flux density sensing means magnetically coupled to said input path means of said second identical means,

a flux density sensor limit comparator means,

an electronic switch means having a first and a second alternately operating output means,

means connecting the output of said first flux density sensor as one input to said flux density sensor limit comparator means,

means connecting the output of said second flux density sensor as a second input to said flux density sensor limit comparator means,

means connecting the output of said flux density sensor limit comparator means as the controlling input to said electronic switch means,

means for connecting said first output of said electronic switch means as a second input to said first amplifier means,

means for connecting said second output of said electronic switch means as a second input to said second amplifier means,

whereby said voltage and current error signals enable the amplifier means to provide stabilization control for the contiguous direct current pulse power,

said amplifiers alternate the minimum permeance state and the variable permeance state between said first and second identical means in response to the output of said flux density limit comparator means being a switching input to said electronic switch means which enables alternate ones of said first and second amplifier means, the degree of permeance control provided to said first and second electromagnetically coupled variable permeance control means being a function of the said error signals.

4,162,442
CAPACITOR EQUIPMENT

Harry Frank, Västerås, Sweden, assignor to Asea Aktiebolag, Västerås, Sweden

Filed Feb. 28, 1978, Ser. No. 882,158

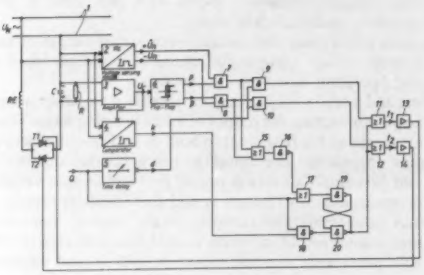
Claims priority, application Sweden, Oct. 13, 1977, 7711515

Int. Cl.[2] H02J *3/18*

U.S. Cl. 323—106 **2 Claims**

1. Capacitor equipment for connection to an AC network, comprising a capacitor connected in series with a bi-directional static switch for connection to the network and disconnection from the network of the capacitor, a discharge resistor connected to the capacitor for discharging the capacitor after said disconnection, voltage sensing means for sensing the instantaneous values of the AC network voltage and of the capacitor voltage, comparator means connected to said voltage sensing means and to said switch for connecting said capacitor to the network when the difference between said instantaneous values is lower than a predetermined level, means for periodically

making said switch conducting during a predetermined time interval after disconnection of the capacitor from the network, thereby keeping said capacitor charged with a voltage of constant polarity during said interval, and means for making said switch non-conducting after the end of said interval, thereby allowing the capacitor to discharge through said discharge resistor.



4,162,443

SPEED MEASURING SYSTEMS

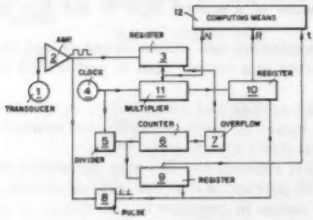
Malcolm Brearley, Solihull, and Roger J. Banks, Radford, both of England, assignors to Girling Limited, Birmingham, England

Filed Oct. 31, 1977, Ser. No. 846,761

Claims priority, application United Kingdom, Nov. 9, 1976, 46490/76

Int. Cl.[2] G01R *23/02*

U.S. Cl. 324—78 D **20 Claims**



1. A method of measuring the frequency of a pulse signal comprising counting the number of complete pulse cycles and measuring the fractional value of any incomplete pulse cycle occurring during a fixed sampling period, and summing said number of complete pulse cycles and said fractional value of any incomplete pulse cycle so as to obtain a total proportional to said frequency, said fractional value of an incomplete pulse cycle being measured by counting clock pulses occurring during said incomplete pulse cycle and comparing this with clock pulses occurring during a complete pulse cycle.

4,162,444

PEAK LEVEL DETECTOR

Gregg S. Rodgers, Indianapolis, Ind., assignor to Tuscan Corporation, Indianapolis, Ind.

Filed Jul. 8, 1977, Ser. No. 813,811

Int. Cl.[2] G01R *19/16;* **H03K** *5/20*

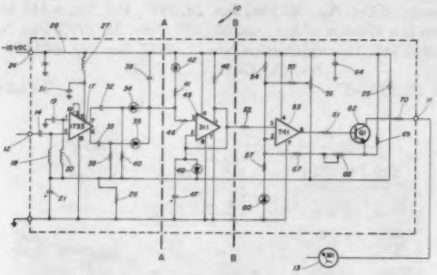
U.S. Cl. 324—103 P **17 Claims**

1. A peak detector circuit which comprises means for linearly displaying, on a display device, the peak level of video modulated, incoming signals as well as CW incoming signals received from a signal source which means includes:

(a) first peak detector means coupled to said signal source and incorporating a full wave detector providing a voltage on a first capacitor representative of peaks of said incoming signal;

(b) second peak detector means coupled to said first capacitor for measuring peaks thereon and providing a second capacitor with a larger time constant than the first capacitor; and

(c) display driver means for linearly producing a signal proportional to the signal on said second capacitor.



4,162,445

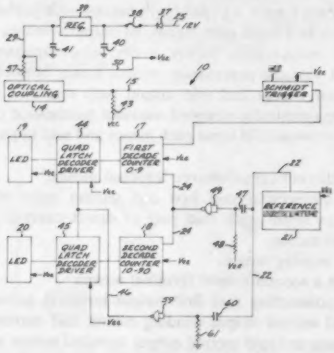
DIGITAL SPEEDOMETER

Scott Campbell, 2025 E. Whiting, Apt. G, Fullerton, Calif. 92632

Filed Dec. 12, 1977, Ser. No. 859,583

Int. Cl.[2] G01P *3/36;* **G01R** *25/00*

U.S. Cl. 324—175 **9 Claims**



1. A digital speedometer for use in an automotive vehicle having an electrical power system and a rotatable mechanical speedometer driver comprising:

a transducer arranged for mounting on said vehicle and adapted for engagement with said speedometer driver that is located within a vehicle transmission line housing in an automotive vehicle, wherein said transducer includes:

a transducer housing with an annular threaded fitting adapted to threadably engage with a threaded speedometer driver access port in an said automotive vehicle transmission line housing,

a shaft mounted for rotation within said transducer housing and having a termination at one end adapted for mechanical coupling with said speedometer driver and arranged coaxially within said threaded fitting,

a rotatable member carried upon said shaft,

an optical encoder operatively associated with said rotatable member for sensing speed of rotation thereof and for emitting pulses at a pulse rate responsive thereto,

an electrical signal lead extending from said transducer housing,

an electrical power lead extending from said transducer housing and connected to said vehicle power system,

counting means coupled to receive pulses from said optical encoder on said electrical signal lead, and having a reset,

buffer storage means connected to said counting means and having latch enabling means which, when enabled, load an accumulated pulse count from said counting means into said buffer storage means,

display means remotely located from said transducer and connected to said buffer storage means for displaying an image representation of the number of pulses loaded in said buffer storage means,

a variable oscillator for emitting periodic electrical pulses at a predetermined frequency less than the frequency of pulse emission from said optical encoder and having a common output connected both to said reset of said counting means and to said latch enabling means of said buffer storage means, to both enable said buffer storage means and thereafter to reset said counting means with the same pulse,

oscillator adjustment means for varying the frequency of oscillator output, and

electrical connections for obtaining electrical energy for said counting means, said display means, said buffer storage means, and for said oscillator and adapted for connection to the electrical power system of said automotive vehicle.

4,162,446

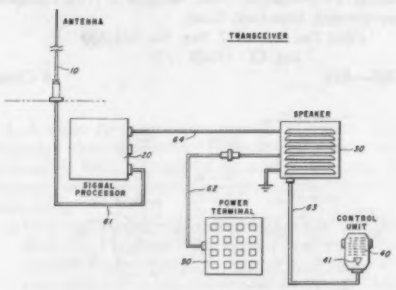
TRANSCEIVER WITH ONLY ONE REFERENCE FREQUENCY

Michael J. Cochran, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Apr. 27, 1977, Ser. No. 791,450

Int. Cl.[2] H04B 1/40

U.S. Cl. 325—15 **10 Claims**



1. A transceiver comprised of:

(a) first mixer means having inputs coupled to simultaneously receive (1) input signals comprised of a plurality of non-overlapping frequency channels and (2) mixing frequency signals of a second selectable frequency, for generating in response thereto, first mixer output signals in which said input signal is shifted in frequency such that the center frequency of a selected one of said frequency channels is shifted to a predetermined frequency;

(b) filter means coupled to said mixer means for defining a frequency range of said first mixer output signals around said predetermined center frequency to filter out all but said selected one of said frequency channels;

(c) detector means having an input coupled to said filter and coupled to receive first clocking signals of a first selectable frequency for demodulating said selected one frequency channel;

(d) first transducer means coupled to said demodulator means for converting said demodulated frequency channel into audible sound;

(e) second transducer means for converting audible sound into information signals;

(f) modulator means having inputs coupled to said second transducer means for receiving said information signals and coupled to receive first clocking signals of said first selectable frequency for modulating said information signals in response to said first selectable frequency;

(g) switch means selectively coupling said first mixer means and said modulator means to said filter means;

(h) second mixer means having inputs coupled to simultaneously receive (1) input signals from said filter means and (2) mixing frequency signals of said second selectable frequency, for generating in response thereto, second mixer output signals in which said input signal is shifted in frequency such that the center frequency of the filtered frequency channel is shifted to a predetermined frequency;

(i) means for coupling said second mixer means to an antenna means for transmission of said second mixer output signals;

(j) reference frequency generator means for generating clocking signals of a single reference frequency;

(k) mixing frequency generator means comprised of programmable counter means coupled to said reference frequency generator means for selectively generating said second selectable frequency to said first and second mixer means; and

(l) modulator/detector clocking means comprised of programmable counter means coupled to said reference frequency generator means and to said modulator means and to said detector means for generating said first selectable clocking signals thereto.

4,162,447

FREQUENCY SYNTHESIS METHOD FOR AN AM-SSB TRANSMITTER-RECEIVER

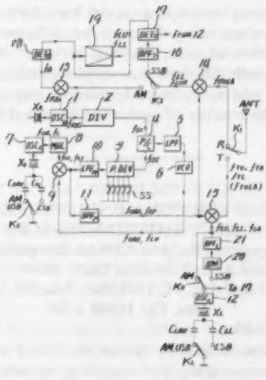
Toshihiko Teshirogi, Machida, and Sumio Tsuruta, Kawagoe, both of Japan, assignors to Cybernet Electronic Corporation, Kanagawa, Japan

Filed May 3, 1977, Ser. No. 793,302

Claims priority, application Japan, Jun. 30, 1976, 51-77178; Jun. 30, 1976, 51-77179

Int. Cl.[2] H04B 1/40

U.S. Cl. 325—18 **2 Claims**



1. A frequency synthesis method for transmission and reception of AM-SSB signals using a PLL synthesizer in a AM-SSB transceiver having a transmitter section and a receiver section which comprises the steps of:

during the transmission of AM and first sideband signals, supplying a mixer with an offset frequency of an offset oscillator and an output frequency of a voltage-controlled oscillator;

applying a difference signal frequency outputted from said mixer to a variable frequency divider in the PLL synthesizer;

using a sum signal frequency outputted from said mixer as the local oscillation frequency of the receiver section and as an input to a mixer of the transmitter section where a transmitting frequency is produced;

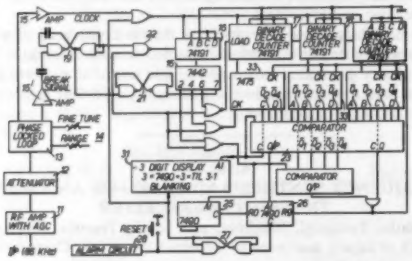
supplying the mixer of the transmitter section with a transmitter section local oscillation frequency as a further input; and

for the transmission of the other sideband signal, simultaneously shifting both the offset frequency and the transmitter section local oscillation frequency by predetermined amounts.

4,162,448
RADIO SIGNALLING SYSTEMS

William D. Gilmour, deceased, late of Glastonbury, England (by Margaret Gilmour, successor), assignor to Lewis Security Systems Limited, Surrey, England

Filed Mar. 16, 1977, Ser. No. 778,150
Int. Cl.[2] H04B *7/00*
U.S. Cl. 325—37 **3 Claims**



2. A radio signalling system including a number of portable tokens each capable of transmitting signals in the form of a carrier frequency which is common to the tokens, with spaced modulation pulses superimposed on the carrier and defining a carrier burst between successive of said pulses, the number of carrier frequency cycles in a carrier burst between successive modulation pulses being different for different tokens, and a receiver capable of distinguishing between received signals from tokens with different characteristic numbers of cycles in their bursts, said receiver comprising a display of a symbol identifying the number of cycles in a received burst of carrier frequency.

4,162,449
APPARATUS FOR COMMUNICATING RECEIPT OF TRANSMITTED MESSAGES

Bernard Bouyssounouse, and Chantal Bouyssounouse, both of 840 Hamilton Ave., Palo Alto, Calif. 94301

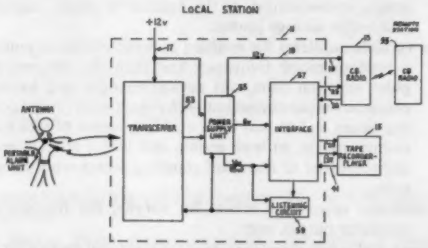
Filed Apr. 14, 1978, Ser. No. 896,314
Int. Cl.[2] H04B *1/00*
U.S. Cl. 325—55 **6 Claims**

1. In a communication system including a portable unit capable of transmitting and receiving signals, a player unit capable of playing a pre-recorded emergency message, and a CB radio capable of communicating with a listener at a remote CB radio station, an apparatus comprising:

transceiver means disposed for producing a second signal in response to receiving a first signal from the portable unit, and for transmitting to said portable unit, in response to a fourth signal, a fifth signal indicating receipt by the listener of the emergency message;

power supply means coupled to receive the second signal from the transceiver means and coupled to the CB radio for providing power and activating said radio;

interface means coupled to the power supply means, to the CB radio, and to the player unit for activating the player unit causing it to play the emergency message and the CB radio to transmit the message in response to power applied by the power supply means, for deactivating the player causing it to stop playing the emergency message and the CB radio to stop transmitting the message in response to a



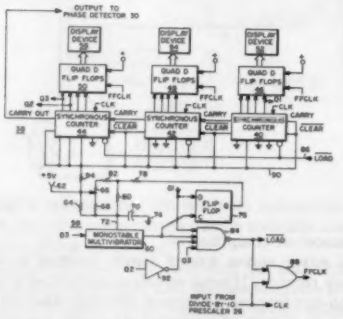
selected signal from the player unit, and for producing a third signal representing a reply received by the CB radio from the listener; and

listening circuit means coupled to receive the third signal from the interface means, and coupled to the transceiver and power supply means for applying the fourth signal to the transceiver means upon detecting a selected acknowledgement message in the listener's reply indicating receipt by the listener of the transmitted emergency message.

4,162,450
PROGRAMMABLE DIVIDER

Carl F. Buhrer, Framingham, Mass., assignor to GTE Laboratories Incorporated, Stamford, Conn.

Filed Dec. 16, 1977, Ser. No. 861,360
Int. Cl.[2] H04B *1/26*
U.S. Cl. 325—419 **8 Claims**



1. For use in a frequency synthesizer having a phase-locked loop including an electrically controllable oscillator, a reference frequency source, and a phase detector circuit for comparing the output from the reference frequency source with a divided-down output from the electrically controllable oscillator; a programmable divider for generating the divided-down output comprising

a counter circuit means operable to count through a recurring sequence of counts in response to clock pulses applied thereto and having an output connection coupled to the phase detector circuit;

counter control means coupled to the counter circuit means comprising

means for applying clock pulses to the counter circuit

means at a rate dependent upon the output from the electrically controllable oscillator,

timing means for providing a variable time delay period, said timing means initiating a variable time delay period in response to the occurrence of a first predetermined count in the counter circuit means and producing an indication upon termination of the variable time delay period, and

loading means coupled to the timing means for loading a second predetermined count into the counter circuit means in response to an indication from the timing means upon termination of said variable time delay period;

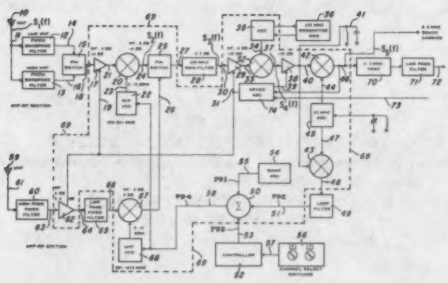
said counter circuit means being operable to apply an output pulse to the phase detector circuit in response to the occurrence of a third predetermined count in the counter circuit means.

4,162,451

MESFET-DEVICE SURFACE-WAVE-DEVICE CHANNEL SELECTOR

Darrell L. Ash, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jul. 5, 1977, Ser. No. 813,202
Int. Cl.[2] H04B 1/16
U.S. Cl. 325—451 **12 Claims**



1. A radio frequency-intermediate frequency section of a frequency channel selector for obtaining a selected channel of frequencies from a plurality of non-overlapping frequency channels, said radio frequency-intermediate frequency section comprising:

at least one mixing means including a metal semiconductor field effect transistor and having first and second inputs coupled to simultaneously receive radio frequency signals representative of the plurality of frequency channels and mixing signals of a selected intermediate frequency for frequency shifting the selected frequency channel to a predetermined center frequency in the intermediate frequency range; and

acoustic surface wave filter means connected to the output of said mixing means for essentially passing only the channel of said predetermined center frequency.

4,162,452

CHANNEL SELECTION FOR A TELEVISION RECEIVER HAVING LOW-GAIN HIGH FREQUENCY RF-IF SECTION

Darrell L. Ash, Garland, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

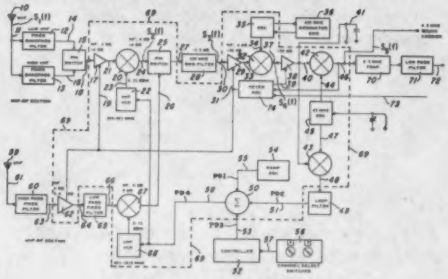
Filed Jul. 5, 1977, Ser. No. 813,137
Int. Cl.[2] H04B 1/16
U.S. Cl. 325—373 **8 Claims**

1. In a channel selector for a television receiver including a radio frequency section and an intermediate frequency section, the combination comprising:

spectrum filter means disposed in the radio frequency section for receiving radio frequency signals representative of a plurality of television channels and for filtering at least one frequency spectrum of television channels from the received signals;

at least one mixing means connected to the output of said spectrum filter means, said mixing means including a metal semiconductor field effect transistor and having first and second inputs coupled to simultaneously receive said frequency spectrum of television channels from said spectrum filter means and mixing signals of a selected intermediate frequency for frequency shifting the selected frequency channel of said frequency spectrum of television channels to a high intermediate frequency substantially greater than 45 MHZ;

channel selecting filter means having an input coupled to the output of said mixing means for filtering said selected frequency channel at said high intermediate frequency so as to pass said selected frequency channel;



second mixing means disposed in the intermediate frequency section and having first and second inputs coupled to simultaneously receive the filtered selected frequency channel at said high intermediate frequency from the output of said channel selecting filter means and mixing signals of a predetermined fixed frequency for frequency shifting said filtered selected frequency channel at said high intermediate frequency to a substantially lower second intermediate frequency; and

amplifier means having a relatively high gain disposed in said intermediate frequency section and connected to the output of said second mixing means for providing gain to said filtered selected frequency channel at the lower second intermediate frequency, the added gain provided by said amplifier means in said intermediate frequency section being substantially in excess of the total gain provided to the signal in the radio frequency section through said channel selecting filter means.

4,162,453

DURATION RANGE DETERMINATION OF INCURSIONS BY A VARIABLE SIGNAL

Ralph G. Rudolph, Edgewood Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jul. 27, 1977, Ser. No. 819,531
Int. Cl.[2] H03K 5/20, 9/08
U.S. Cl. 328—111 **5 Claims**

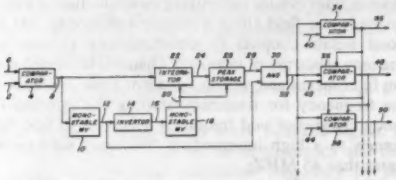
1. A circuit for determining whether the duration of each incursion by a variable signal on one side of a selected level occurs within a selected range comprising

means for generating a squared waveform signal having pulses corresponding to each incursion by the variable signal from the selected level,

an integrator circuit connected to the generating means for providing a first intermediate signal indicative of the duration of each pulse resulting from incursions on one side of the selected level,

a gating circuit connected to the generating means and the integrator circuit and responsive to the trailing edge of

each pulse for providing an intermediate pulse having a magnitude corresponding to the first intermediate signal, and



a comparator circuit connected to the gating circuit for providing an output signal when the magnitude of the intermediate pulse exceeds a reference signal input corresponding to one limit of the selected range.

4,162,454

NOISE IMMUNE VOLTAGE COMPARATOR

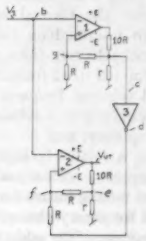
Svein E. Olsen, Fölvägen 16, Södertälje, Sweden

Filed Dec. 14, 1977, Ser. No. 860,375

Claims priority, application Sweden, Jun. 15, 1977, 7706953

Int. Cl.[2] H03K *5/153*

U.S. Cl. 328—147 **16 Claims**



1. A voltage comparator including at least first and second amplifier circuits; input means for coupling the input circuit of each amplifier circuit to an input signal which is a function of the difference between a voltage to be compared and a reference voltage; threshold level shift means coupled between the output of the first amplifier circuit and the input circuit of the second amplifier circuit for modifying the threshold level of the second amplifier circuit in accordance with the output of the first amplifier circuit, the output of the second amplifier circuit forming the output of the voltage comparator; positive feedback circuits coupled to each of said amplifier circuits, respectively, for conditioning said amplifier circuits for bistable operation and for providing said first amplifier circuit with positive hysteresis; the output of said threshold level shift means being combined with the positive feedback signal of the second amplifier circuit, said combined signals being applied to said input circuit of said second amplifier circuit to establish a noise immune, bistable comparator having a hysteresis gap which is selectively greater than, less than or equal to zero depending upon the degree of positive feedback of said second amplifier circuit and the magnitude of the output signal of said threshold level shift means, the noise immunity of the comparator depending generally on the degree of positive feedback of said first amplifier circuit, which exhibits positive hysteresis.

4,162,455

AMPLIFIER SYSTEMS

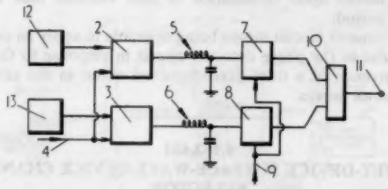
David R. Birt, Charlwood, England, assignor to Communications Patents Limited, London, England

Filed Jan. 4, 1978, Ser. No. 866,816

Claims priority, application United Kingdom, Jan. 7, 1977, 476/77

Int. Cl.[2] H03F *3/38*

U.S. Cl. 330—10 **5 Claims**



1. An amplifier system comprising at least two Class D amplifiers the outputs of which drive a common system output to provide modulated RF output signals, switching frequency generating means for providing separate clock pulse trains to said at least two Class D amplifiers, and means interlacing the said separate clock pulse trains to obtain cancellation of switching frequency ripple at the common system output thereby modulating said RF output signals to produce a modulated carrier.

4,162,456

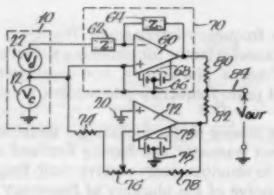
DIFFERENTIAL AMPLIFYING SYSTEM

Henry J. Lukes, Bellevue, Wash., assignor to Sundstrand Data Control, Inc., Redmond, Wash.

Filed Jan. 10, 1978, Ser. No. 868,427

Int. Cl.[2] H03F *3/45*

U.S. Cl. 330—69 **21 Claims**



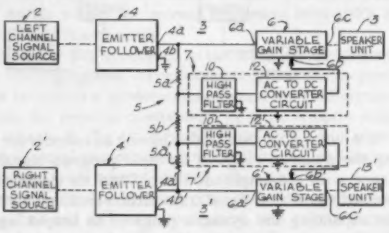
1. A differential signal processing system for eliminating a common mode component of a composite signal comprised of the common mode component and a differential component, said signal being provided by a signal source having a ground terminal and two output terminals separated from the ground terminal, said signal processing system comprising:

a main differential amplifier having inverting and noninverting input terminals, and an output terminal, said noninverting input terminal being operatively connected to one of the signal source output terminals, said inverting input terminal being operatively connected by means of a first input impedance to the other of said signal source output terminals, and a first feedback circuit connecting said differential amplifier output terminal to said inverting input terminal thereof;

an inverting auxiliary amplifier having its inverting input terminal connected by means of a second input impedance to said one signal source output terminal and its noninverting input terminal connected to ground, said auxiliary amplifier including a second feedback circuit connecting the output terminal thereof to said inverting input terminal thereof; and

means for combining the output of said main differential amplifier and the output of said auxiliary amplifier effective to provide at an output terminal of said combining means an output signal corresponding to only the differential signal.

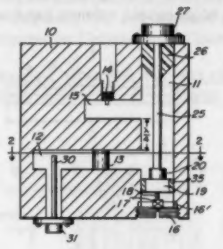
4,162,457
EXPANSION CIRCUIT FOR IMPROVED STEREO AND APPARENT MONAURAL IMAGE
Robert M. Grodinsky, 4448 W. Howard, Skokie, Ill. 60076
Filed Dec. 30, 1977, Ser. No. 866,021
Int. Cl.[2] H03F 3/68
U.S. Cl. 330—295 **18 Claims**



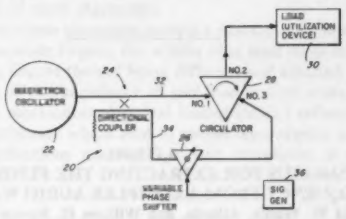
1. An expander circuit for a multi-channel amplifier system including left and right amplifier channels respectively driving left and right speaker units, each channel including a variable gain stage therein whose gain varies in direct proportion to the amplitude of control signals fed to control signal input terminals thereof, said expander circuit comprising left and right expansion control signal providing means having inputs for receiving respectively left and right amplifier channel signals and output terminals connected respectively to said control signal input terminals of said variable gain stages of said left and right amplifier channels, at which output terminals the expansion control signals respectively appear in proportion to the amplitudes of the sum of the signal components fed to said inputs, the improvement comprising signal coupling circuit means for coupling the signals of said amplifier channels to the input terminals of said expansion control signal providing means, said signal coupling circuit means including respective means associated with said channels for respectively coupling at least a portion of the signals therein having substantially different waveforms to the input terminals of the expansion control signal providing means of the associated channels and for cross-coupling a substantially lesser proportion of the same to the input terminal of the expansion control signal providing means of the non-associated channels, whereby the original signal separation of the two amplifier channels is substantially maintained in spite of said expansion.

4,162,458
TM COAXIAL CAVITY OSCILLATOR AND POWER COMBINER
Michael Dydyk, Scottsdale, and Joseph R. Tuzzolino, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.
Filed May 26, 1978, Ser. No. 910,162
Int. Cl.[2] H03B 7/14
U.S. Cl. 331—56 **10 Claims**

1. In oscillatory apparatus for frequencies on the order of microwave, millimeter wave and above, including primary oscillatory circuitry having an active device coupled into said circuitry for sustaining oscillations therein and a first resonant circuit tuned to have an operating mode at a predetermined frequency, a second resonant circuit tuned to operate at the predetermined frequency and coupled to said primary oscillatory circuitry for controlling oscillations therein to the predetermined frequency, and output means coupled to said first resonant circuit for removing power therefrom at the predetermined frequency, the improvement comprising a TM coaxial cavity forming the first resonant circuit.



4,162,459
MAGNETRON TUNING CIRCUIT
Howard Scharfman, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed Sep. 18, 1978, Ser. No. 943,582
Int. Cl.[2] H03B 9/10
U.S. Cl. 331—90 **4 Claims**



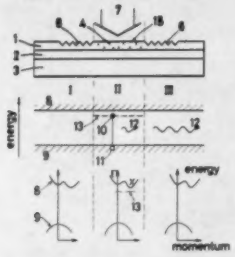
1. A tuning circuit for a microwave source comprising:
a circulator;
a directional coupler connected between an output port of said source and a first terminal of said circulator, a second terminal of said circulator providing power for a load; and
a phase shifter connected between said directional coupler and third terminal of said circulator, said directional coupler providing a fraction of the power of the output signal of said source to said phase shifter, the phase of said phase shifter effecting the reflection coefficient of power reflected back into said output port of said source for controlling the frequency thereof.

4,162,460
OPTICAL CIRCUIT ELEMENT
Shunichi Gonda, Higashi-Murayama, Japan, assignor to Agency of Industrial Science & Technology, Tokyo, Japan
Filed Mar. 28, 1977, Ser. No. 781,886
Claims priority, application Japan, May 26, 1976, 51-60158; Jun. 21, 1976, 51-72227
Int. Cl.[2] H01S 3/19
U.S. Cl. 331—94.5 H **6 Claims**

1. An optical circuit element comprising
(a) a waveguide of a semiconductor material,
(1) the composition of said semiconductor material being near the direct-indirect transition point and
(2) said waveguide having integrally formed therein a region wherein stimulated emission occurs, said region being formed by doping a portion of said waveguide with an isoelectronic impurity, the energy level of said isoelectronic impurity being established within the forbidden band of said doped region,
(b) means for producing a population inversion of electrons

in the energy level of said doped region and holes in the valance band of said doped region,

(c) means for recombining the electrons in said impurity level and holes in said valance band, and



(d) means for introducing an input light having a wavelength corresponding to the energy difference between said level of said isoelectronic impurity and said valance band into said doped region whereby electrons in said impurity level and holes in said valance band are recombined to amplify said input light.

4,162,461

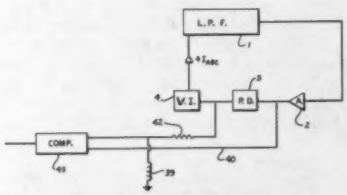
APPARATUS FOR EXTRACTING THE FUNDAMENTAL FREQUENCY FROM A COMPLEX AUDIO WAVE FORM

David W. Wallis, Atlanta, and William H. Stewart, Mableton, both of Ga., assignors to S.W.I.S., Inc., Atlanta, Ga.

Filed Jul. 25, 1977, Ser. No. 818,383

Int. Cl.[2] H03H *7/10, 7/14*

U.S. Cl. 333—174 **4 Claims**



1. Apparatus for extracting the fundamental frequency from a complex wave form having harmonics, said apparatus comprising a low pass filter having a plurality of sections each section including capacitance means of fixed capacitance and a variable transconductance, amplifier means to which the output of said filter is supplied, peak detector means to which the output of said amplifier means is supplied, a voltage to current converter to which the output of said peak detector means is supplied, circuit means for supplying the output signal from said voltage to current converter to each of said variable transconductances thereby to vary the frequency response characteristic of said low pass filter, and comparator means for receiving an alternating current signal dependent upon the output of said filter and for receiving a direct current signal dependent upon the output of said peak detector means and for comparing said signals and for supplying the resultant signal to an output circuit.

4,162,462

NOISE REDUCTION SYSTEM

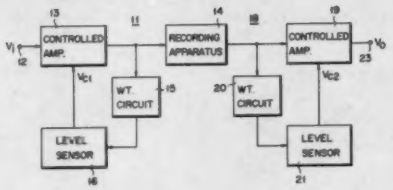
Kenjiro Endoh, Higashimine; Kazuo Kitagawa, Kawasaki, and Hideshi Kira, Yokohama, all of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki, Japan

Filed May 23, 1977, Ser. No. 799,337

Claims priority, application Japan, May 21, 1976, 51-57863

Int. Cl.[2] H04B *1/64*

U.S. Cl. 333—14 **11 Claims**



1. A noise reduction system having an encoder for compressing the dynamic range of an input program signal in accordance with the amplitude thereof and for delivering a compressed signal to a signal transmission medium, and a decoder for expanding the dynamic range of an output signal of the signal transmission medium in accordance with the amplitude thereof, said encoder and decoder having emphasis and de-emphasis circuits for respectively and inversely emphasizing and de-emphasizing a specified frequency range of an operational audio frequency band, said specified frequency range not lying within a main frequency range in which the majority of the energy of said program input signal lies, comprising:

said encoder having a transfer function that for a predetermined relatively high level program input signal exhibits low gain over the full operational audio frequency band and a low degree of frequency emphasis in said specified frequency range, and that for relatively low-level and intermediate level program input signals exhibits high gain over the full operational audio frequency band and a high degree of frequency emphasis for the specified frequency range; and,

said decoder having a substantially inverse transfer function relative to that of said encoder.

4,162,463

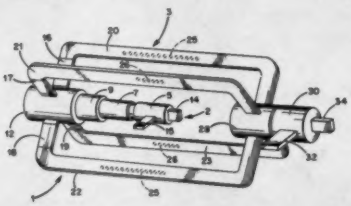
DIPLEXER APPARATUS

Joseph G. DiTullio, Woburn, and Leonard I. Parad, Framingham, both of Mass., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 23, 1977, Ser. No. 863,807

Int. Cl.[2] H01P *1/17, 1/20, 5/16*

U.S. Cl. 333—117 **14 Claims**



1. Diplexer apparatus comprising:

first transducer means having first and second input ports and an output port, said first transducer means being operative to receive first and second signals within a first frequency bandwidth at the first and second input ports, respectively, and to establish said signals at the output port thereof to be orthogonal and linearly-polarized with respect to each other;

first polarizer means coupled to the first transducer means and operative to transform the orthogonal linearly-polarized signals at the output port of the first transducer means to orthogonal circularly-polarized signals;

electromagnetic wave conducting means having a first port coupled to the first polarizer means and a second port, said electromagnetic wave conducting means being operative to pass the circularly-polarized signals from the first polarizer means to the second port thereof, said electromagnetic wave conducting means further having a third port and a fourth port and being further operative to receive first and second circularly-polarized signals within a second frequency bandwidth at the second port and to couple orthogonal vectoral components of said circularly-polarized signals within the second frequency bandwidth to the third and fourth ports;

second polarizer means coupled to the third and fourth ports of the electromagnetic wave conducting means and operative to introduce a predetermined phase shift differential between the vectoral components of the circularly-polarized signals at the third and fourth ports, said phase shifted vectoral components being orthogonal and linearly-polarized with respect to each other; and

output means coupled to the second polarizer means and having first and second output ports, said output means being operative to combine the vectoral components of the orthogonal linearly-polarized signals derived by the second polarizer means from the first and second circularly-polarized signals into first and second resultant orthogonal linearly-polarized signals each corresponding to a different one of the circularly-polarized signals and to present the first and second resultant linearly-polarized signals to separate ones of the first and second output ports.

4,162,464

DELAY LINE

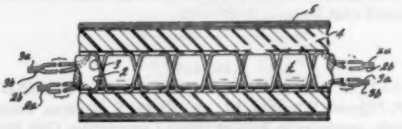
Otto Breitenbach, Nüremberg, Fed. Rep. of Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft, Hannover, Fed. Rep. of Germany

Filed Nov. 11, 1977, Ser. No. 850,598

Claims priority, application Fed. Rep. of Germany, Nov. 12, 1976, 2651597

Int. Cl.[2] H01P *9/02*; H03H *7/30*

U.S. Cl. 333—138 **2 Claims**



1. Delay line comprising:

a core;

a first group of insulated conductors being electrically connected in parallel, and being at their respective ends wound around the core in parallel relation to each other and in helical configuration;

a second group of insulated conductors also connected in parallel at their respective ends and being wound around the core in parallel relation to each other and in a helical configuration having opposite pitch so that the conductors of the first group intersect the conductors of the second groups establishing multiple intersections but without making contact, the conductors of the first group being braided with the conductors of the second group so that each conductor of the first group runs alternatingly over and under the conductors of the second group and vice versa, the first and second groups each constitute, respectively, signal path and return path for the delay line.

4,162,465

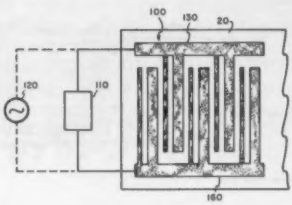
SURFACE ACOUSTIC WAVE DEVICE WITH REFLECTION SUPPRESSION

Bill J. Hunsinger, Mahomet, Ill., and Kentaro Hanma, Yokohama, Japan, assignors to University of Illinois Foundation, Urbana, Ill.

Filed Sep. 14, 1977, Ser. No. 833,028

Int. Cl.[2] H03H *9/04, 9/32, 9/30*; H01L *41/10*

U.S. Cl. 333—151 **12 Claims**



1. A transducer for a surface acoustic wave device which includes an acoustic wave propagating substrate, said transducer being adapted to coupling to an electrical load and/or source, comprising:

a pair of interdigitated comb electrodes formed on said substrate;

means for applying an electrical load and/or source across said pair of comb electrodes;

each of said comb electrodes having a plurality of interdigitated electrode fingers, the widths of at least some of the adjacent fingers thereof being different and selected as a function of the impedance of said load and/or source to produce mechanical electrical loaded (MEL) reflections in said substrate which tend to cancel regeneration wave (RW) reflections generated at said transducer in said substrate.

4,162,466

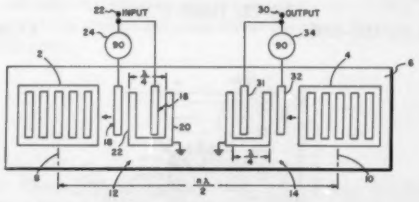
SURFACE ACOUSTIC WAVE RESONATOR

Bill J. Hunsinger, Mahomet, and Roger D. Fildes, Urbana, both of Ill., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Sep. 28, 1977, Ser. No. 837,569

Int. Cl.[2] H03H *9/02, 9/26, 9/32, 9/04*

U.S. Cl. 333—194 **7 Claims**



1. A surface acoustic wave resonator responsive to a frequency of wavelength λ comprising dielectric support means having first and second reflector means spaced apart by an integral number of λ/2 wavelengths;

unidirectional transducer means arranged between said reflector means and responsive to an input signal including said frequency, to induce a unidirectionally propagating, uniform beam; acoustic wave in said dielectric support means in the direction of said first reflector means; and

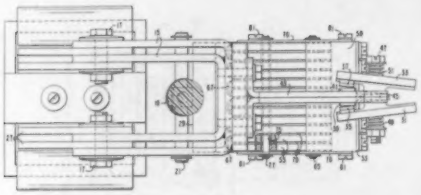
output means positioned between said unidirectional transducer means and said second reflector means for sensing and providing output signals indicative of the oscillation of said surface waves between said reflector means.

4,162,467

CIRCUIT BREAKER CONTACT STRUCTURE

Albert R. Cellerini; Louis N. Ricci, and James O. Rexroad, all of Beaver, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 16, 1977, Ser. No. 806,969
Int. Cl.[2] H01H 75/10
U.S. Cl. 335—16 6 Claims



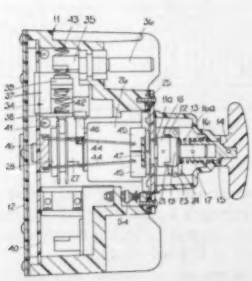
1. A circuit interrupter with current withstand capability comprising stationary contact means and movable contact means movable between open and closed position, terminal conductor means comprising first and second terminals, the stationary contact means comprising first and second conductors being substantially parallel and having a gap therebetween, the movable contact means being connected to the first terminal and the second conductor being connected to the second terminal, the first conductor being pivotally mounted in the second conductor, the second conductor being in the zone of pivotal movement of the first conductor, the current path through the interrupter being from the first terminal and through the movable contact means, the first conductor, the second conductor, and then to the second terminal so that when a fault-current of minimal predetermined conditions occurs a magnetic flux occurs between the first and second conductors to urge the first conductor toward the movable contact means, and bias means for urging the first conductor toward the movable contact means.

4,162,468

MANUALLY OR ELECTRICALLY OPERABLE ELECTRICAL SWITCH

Derek Thornley, Nelson, England, assignor to Lucas Industries Limited, Birmingham, England

Filed Sep. 21, 1977, Ser. No. 835,359
Claims priority, application United Kingdom, Oct. 5, 1976, 41226/76
Int. Cl.[2] H01H 67/00
U.S. Cl. 335—106 6 Claims



1. An electrical switch including a fixed contact, a movable contact, movable into and out of engagement with the fixed contact and resiliently biased out of engagement with the fixed contact, a rotatable operating member and a cam rotatable with the operating member and cooperating through the intermediary of a cam follower with the movable contact, the cam being rotatable in one direction from a rest position to an operative position wherein as a result of cooperation between the cam and the cam follower the movable contact is moved into engagement with the fixed contact, electromagnetic means for moving the cam in the direction of its rotational axis relative to the cam follower, the cam and the operating member being rotatable in the reverse direction from said operative position back to said rest position to permit disengagement of the movable contact from the fixed contact, said cam carrying first and second cam forms each of which is capable, upon rotation of the cam in said one direction, of moving the movable contact into engagement with the fixed contact, said second cam form commencing adjacent the termination of the first cam form, and each cam form including first and second cam tracks, the cam follower cooperating with the first cam track of one of the first and second cam forms during rotation of the cam in said one direction and cooperating with the second cam track of said one of the cam forms during reverse rotation of the cam, there being a guide surface associated with each cam form whereby when the cam has been rotated to its operative position the cam follower is caused to cooperate with the second cam track rather than the first cam track during reverse rotation of the cam, each second cam track including a plateau of a height such that the movable contact is retained in engagement with the fixed contact, and each plateau terminating, during reverse rotation of the cam in a step which, when reached by the cam follower during reverse rotation of the cam permits the movable contacts to move abruptly out of engagement with the fixed contact, and, each cam form further including, adjacent the guide surface a shoulder with which the cam follower cooperates during axial movement of the cam relative to the cam follower to achieve abrupt disengagement of the movable contact from the fixed contact, whereby, operation of said electromagnetic means in the operative position of the cam results in movement of the movable contact to its rest position without reverse rotation of the operating member, and the termination of the first cam form adjacent the commencement of the second cam form being such that after movement of the movable contact by the first cam form to engage the fixed contact, and subsequent return of the movable contact to its rest position by axial movement of the cam further rotation of the operating member and cam in said one direction results in the cam follower cooperating with the second cam form so that the movable contact can again be moved to engage the fixed contact by rotation of the operating member in said one direction, the cam and the operating member in effect being rotated beyond said operative position to achieve cooperation between the cam follower and the second cam form.

4,162,469

COAXIAL SWITCH WITH MAGNETIC LOCKING

John P. Nijman, Wheaton, Ill., and Kamal S. Boutros, Toronto, Canada, assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed May 23, 1977, Ser. No. 799,672
Int. Cl.[2] H01H 3/56
U.S. Cl. 335—186 7 Claims

1. A magnetically-locked switch assembly comprising, in combination:

a switch unit housing defining an interior chamber;

an input connector communicating with said chamber;

an output connector communicating with said chamber;

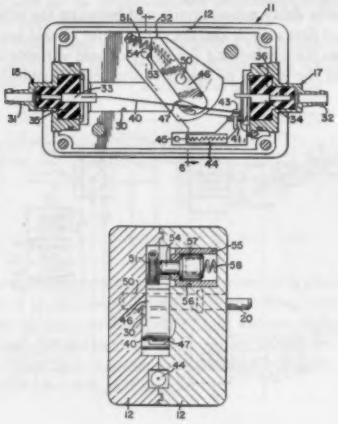
contact means within said chamber having a first position establishing electrical connection between said input connector and said output connector, and a second position providing electrical isolation between said input connector and said output connector;

actuating means including a contact actuator member and an externally accessible member for positioning said contact means in a selected one of said first and second positions;

magnetic locking means in said chamber physically inaccessible from the exterior of said housing and responsive to an externally-applied magnetic field for preventing actuation

of said contact actuator member between said first and second positions in the absence of said field; and

clutch means disposed between said externally accessible



member and said contact actuator member for preventing the application of sufficient force to damage said contact actuator member when actuation thereof is prevented by said magnetic locking means.

4,162,470

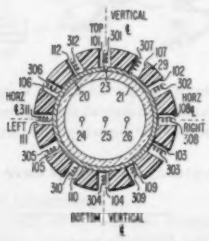
MAGNETIZING APPARATUS AND METHOD FOR PRODUCING A STATICALLY CONVERGED CATHODE RAY TUBE AND PRODUCT THEREOF

Joseph L. Smith, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jul. 26, 1977, Ser. No. 819,093

Int. Cl.[2] H01F *7/00*

U.S. Cl. 335—210 **22 Claims**



1. A magnetizing apparatus for use in the static convergence of three in-line electron beams within a cathode ray tube including a magnetic material located adjacent to a neck portion of said cathode ray tube, comprising:

a first plurality of windings suitably arranged for positioning about said neck portion in proximity to said magnetic material and adapted to receive a magnetizing current of sufficient magnitude that will create permanently magnetized regions within said magnetic material that produce a magnetic field within said cathode ray tube for like motion of the outer electron beams, a first multiplicity of windings of said first plurality providing for like motion in a predetermined direction and a second multiplicity providing for like motion in a direction substantially orthogonal to the direction provided by said first multiplicity; and

a second plurality of windings suitably arranged for positioning about said neck portion in proximity to said magnetic material and adapted to receive a magnetizing current of sufficient magnitude that will create permanently magnetized regions within said magnetic material that produce a magnetic field within said cathode ray tube for opposite motion of said outer electron beams, a third multiplicity of windings of said second plurality providing for opposite motion in a predetermined direction and a fourth multiplicity providing for opposite motion in a direction substantially orthogonal to the direction provided by said third multiplicity, said first and second pluralities located in two planes generally perpendicular to the central axis of said cathode ray tube, the windings of said first and second pluralities so angularly oriented about said neck portion as to create compact nonoverlapping permanently magnetized regions.

4,162,471

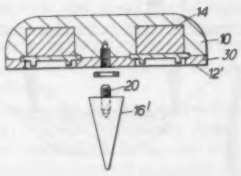
ELECTROMAGNET LIFTING DEVICE

John Peace, Guisborough; Harold Wright, Stockton-on-Tees, and Kenneth Clague, Guildford, all of England, assignors to British Steel Corporation, London, England

Filed Sep. 9, 1977, Ser. No. 831,875

Int. Cl.[2] H01F *7/20*

U.S. Cl. 335—291 **9 Claims**



1. An electromagnetic lifting device for lifting loose ferrous articles comprising: a ferromagnetic body having an electromagnetic excitation winding contained therein and a relatively flat contacting surface, and a pole comprising a ferromagnetic pole piece extending outwardly away from the body, the pole piece having a relatively wide base abutting the contacting surface of the body and tapering to an apex remote from the base, whereby the pole piece can readily penetrate a collection of loose ferrous articles and cause the articles to be attracted to the pole piece.

4,162,472

LINKAGES

Roy C. Turner, Cippenham, and Philip J. Constable, Denham, both of England, assignors to Drayton Controls (Engineering) Limited, England

Filed Jul. 6, 1977, Ser. No. 813,331

Claims priority, application United Kingdom, Jul. 7, 1976, 28327/76

Int. Cl.[2] H01C *10/14*

U.S. Cl. 338—116 **22 Claims**

1. An electromechanical transducer comprising:

a base,

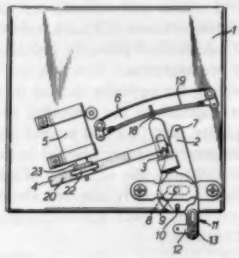
a first link pivotally connected at one end to the base,

a second link pivotally and directly connected to the base,

an electrical resistance element in the form of a track mounted on the base, and

a wiper arm mounted at one end of the second link and slidingly engaging the track, the first link and the second

link being so coupled that pivoting of one link is operative to pivot the other link and the angle through which the



second link pivots is substantially greater than the angle through which the first link pivots.

4,162,473

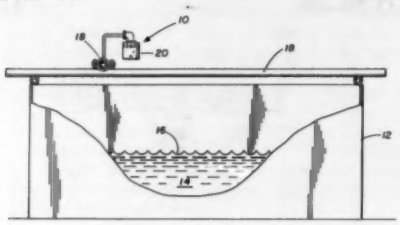
DRILLING MUD LEVEL MEASUREMENT

Joseph G. Utasi, Katy, Tex., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Feb. 13, 1978, Ser. No. 877,437

Int. Cl.[2] G01S *9/68*; G01F *23/00*

U.S. Cl. 340—1 L **6 Claims**



1. An apparatus for measuring the level of drilling mud in a mud pit, wherein ambient air is above the drilling mud, comprising:

a detector positioned above said drilling mud for directing energy through the ambient air between said detector and said drilling mud and receiving returned energy from said drilling mud,

said detector including means for sensing temperature,

an annular shroud located above said drilling mud and positioned around said detector, and

means for promoting and allowing ambient air to circulate upward from said drilling mud through said shroud thereby insuring that said means for sensing temperature is sensing temperature of said ambient air.

4,162,474

YAW-COMPENSATED CORRELATING SONAR TRACKING SYSTEM

Alan Broder, Albertson; Paul Shapiro, Brooklyn, and Seening Yee, Whitestone, all of N.Y., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Sep. 21, 1964, Ser. No. 398,486

Int. Cl.[2] G01S *3/80*

U.S. Cl. 340—6 R **9 Claims**

1. Apparatus comprising

a pair of signal sensors spacially displaced from each other,

means connected to each sensor for quantizing the signals at the output thereof,

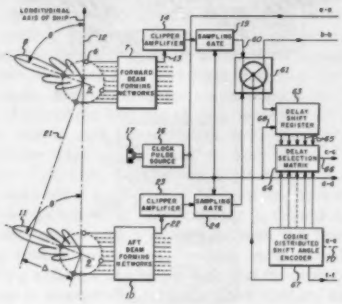
first and second two-mode reversing switches, each switch having two inputs respectively connected to two outputs in one mode and having said two inputs inversely connected to said two outputs in the other mode,

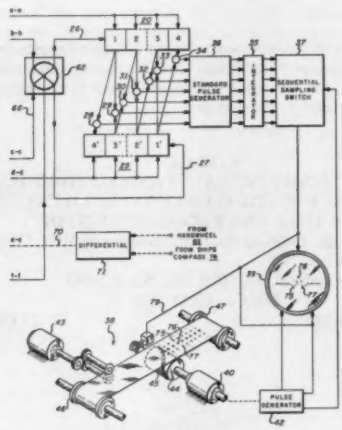
each quantized signal being applied to a respective input of said first switch,

one output of said first switch being connected to one input of said second switch,

variable delay means connected between the other output of said first switch and the other input of said second switch,

means for controlling the delay of said variable delay means and the modes of said first and second switches,





a signal correlator connected to the outputs of said second switch to produce an output signal representing the correlation function of the signals at the outputs of said second switch,

and signal integrating means responsive to said output signals.

4,162,475

TRANSDUCER UTILIZING SAMPLING

Sidney T. Fisher, 53 Morrison Ave., Montreal, Quebec, Canada (H3R 1K3), and Charles B. Fisher, 2850 Hill Park Rd., Montreal, Quebec, Canada (H3H 1T1)

Filed Mar. 24, 1978, Ser. No. 889,899

Int. Cl.[2] H04B *11/00*

U.S. Cl. 340—8 R **19 Claims**

1. An apparatus for using electrical signal wave energy to control the generation of mechanical wave energy in a fluid medium, which comprises:

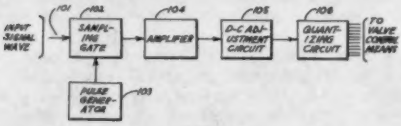
means for producing a sequence of samples of said electrical signal wave at the Nyquist rate for said signal wave or faster, and

means for comparison of the amplitude of each of said signal samples with a set of predetermined amplitudes, and

means for determining the substantial coincidence of the

amplitude of each of said samples with the amplitude of one of said set of predetermined amplitudes, and if such coincidence does not exist, of determining which amplitude of said set of predetermined amplitudes is closest in value to said sample, and

means for energizing a unique combination of one or more output leads from said means for determining coincidence or near-coincidence, for each signal sample, and

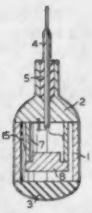


means for opening or closing one or more of a plurality of orifices in a chamber containing fluid under pressure, in response to said energization of said unique combination of output leads from each of said samples, so that the power emitted from said chamber is substantially proportional to the power of said signal sample.

4,162,476
ACCELERATION BALANCED HYDROPHONE II

Bryce L. Fanning, Dartmouth, Canada, assignor to Her Majesty the Queen in right of Canada, as represented by the Minister of National Defence, Ottawa, Canada

Filed Oct. 21, 1976, Ser. No. 734,407
Claims priority, application Canada, Feb. 18, 1976, 245994
Int. Cl.² H04B *13/00*
U.S. Cl. 340—10 **10 Claims**



1. A hydrophone comprising:

(a) a concentric pair of cylindrical transducers nestingly mounted to form a common chamber with the axes of said cylinders positioned parallel to a vertical axis of said chamber;

(b) a first of said transducers comprising a radially poled pressure sensitive cylindrical piezoelectric acoustic transducer mounted parallel to the hydrophone axis;

(c) a second of said transducers comprising a cylindrical accelerometer mounted within the isolation-formed interior of the cylinder of the first transducer;

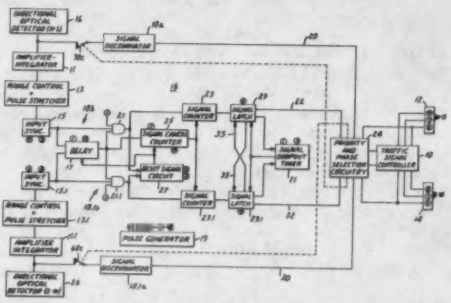
(d) the cylinder of said accelerometer transducer having a diameter and length which are smaller than the diameter and length of said cylindrical piezoelectric transducer for isolating therein the accelerometer from acoustic pressure; and

(e) means for connecting the electrical outputs of the transducer and the accelerometer in a subtracting configuration.

4,162,477
REMOTE CONTROL SYSTEM FOR TRAFFIC SIGNAL CONTROL SYSTEM

John A. Munkberg, Forest Lake, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Jun. 3, 1977, Ser. No. 803,037
Int. Cl.² G08G *1/07*
U.S. Cl. 340—32 **5 Claims**



1. A multiple priority remote control system responsive to at least two different optical energy signals transmitted from vehicles approaching a traffic intersection defined by at least two intersecting roadways for the remote control of a traffic control system for the intersection having a controller for controlling red, yellow and green traffic signal lights, the controller including a control switch for selectively connecting electrical power to the traffic lights with a timing control for timing the operation of the control switch, the remote control system including

a first detector means for the intersection for detecting the optical energy signals transmitted from vehicles approaching the intersection along one roadway for the intersection; said first detector means having an output at which a signal is produced when an optical signal is detected;

a second detector means for the intersection for detecting the optical energy signals transmitted from vehicles approaching the intersection along another roadway for the intersection; said second detector means having an output at which a signal is produced when an optical signal is detected;

a signal discriminator means operatively connected to said output of said first detector means for providing first and second control signals, said first control signal provided in response to detection by the first detector means of at least one of the optical energy signals, said second control signal provided in response to detection by the first detector means of a predetermined one of the possible optical energy signals;

said signal discriminator means operatively connected to said output of said second detector means for providing third and fourth control signals, said third control signal provided in response to detection by the second detector means of at least one of the optical energy signals, the fourth control signal provided in response to detection by the second detector means of the predetermined one of the possible optical energy signals;

a control circuit operatively connected to the controller, said signal discriminator means and the green light circuits of the traffic signal lights for each roadway of the intersection, said control circuit responsive to any one of said control signals for placing said control switch under the control of said control circuit to present the green light associated with such initial control signal except when said any one of said control signals is said first control signal and said fourth control signal is presented while said first control signal is present, said control circuit then responding, as though said fourth control signal was said

any one of said control signals, to present the green light associated with said fourth control signal and except when said any one of said control signals is said third control signal and said second control signal is presented while said third control signal is present, said control circuit then responding, as though said second control signal was said any one of said control signals, to present the green light associated with said second control signal.

4,162,478

CIRCUIT ARRANGEMENT FOR TESTING OPERATING AND/OR CAPACITY CONDITIONS IN AUTOMOTIVE VEHICLES

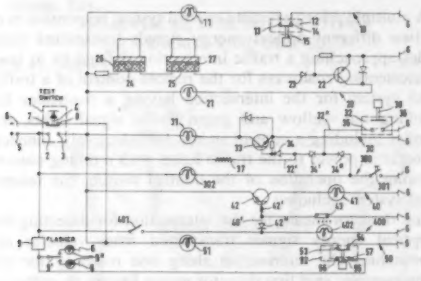
Manfred Huber, Munich; Karl Kapfhammer, Germering; Erwin Schweiger, Dachau; Franz Jochmann, Munich, and Alfred Krappel, Ismaning, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke AG, Fed. Rep. of Germany

Filed Nov. 11, 1976, Ser. No. 740,941

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1975, 2550570

Int. Cl.² G01R *31/02*

U.S. Cl. 340—52 F **20 Claims**



1. A circuit for testing operating and capacity conditions of an automotive vehicle comprising plural parallel circuits each containing at least one pilot lamp and switching means operable in accordance with an operating or capacity condition, and a single test switch to simultaneously energize said pilot lamps independently of vehicle operation, wherein each of said switching means is connected in series with at least one pilot lamp and with said single test switch, and wherein each of said switching means is electrically conductive during normal operating and capacity conditions.

4,162,479

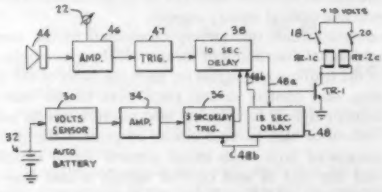
AUTOMOBILE BURGLAR ALARM WITH BATTERY VOLTAGE SENSING MEANS

Larry C. Nickell, Lewisburg, and John L. McCormack, Fairlea, both of W. Va., assignors to Appalachian Electronic Instruments, Inc., Ronceverte, W. Va.

Filed Dec. 13, 1977, Ser. No. 860,157

Int. Cl.² B60R *25/10*

U.S. Cl. 340—63 **13 Claims**



1. An automobile burglar alarm having automobile battery voltage sensing means to be mounted in an automobile at a location accessible to the operator, comprising battery voltage level sensor means to be connected to the positive terminal of the automobile battery for providing an output signal level indicating the battery voltage level and responsive to reduction in the automobile battery voltage when an automobile dome light or trunk light supplied by the battery is turned on to provide a changed output signal level indicative of the reduced battery voltage level, a headlight control relay and a horn control relay for energizing the automobile headlights and horn of the associated automobile, a normally non-conducting transistor connected in circuit with said relays to a supply voltage source to energize the relays when the transistor conducts, a timer circuit connected to said normally non-conducting transistor to supply a timed output signal for causing the transistor to conduct for a predetermined short conduction interval, and an operational amplifier coupled to said sensor means and said timer circuit for supplying an amplified signal adequate to cause the timer circuit to produce said timed output signal in predetermined time relation responsive to said changed output signal level of said battery voltage sensor means, said battery voltage level sensor means being a resistance-capacitor circuit formed of a resistor connected to the automobile battery terminal and a capacitor connected in series between said resistor and electrical ground for establishing a voltage level at the connection between the resistor and capacitor corresponding to the battery voltage level when the capacitor charges up to the full battery voltage over a relatively long delay period determined by the values of the resistor and capacitor, said operational amplifier being coupled to said connection between the capacitor and resistor and providing means responsive to a reduction in the voltage level at said connection which persists for a predetermined time period after the battery voltage reduces responsive to energization of the automobile dome light or trunk light to render the operational amplifier non-responsive to short term high voltage spikes and provide said amplified signal responsive to signal level changes typically less than about 200 millivolts.

4,162,480

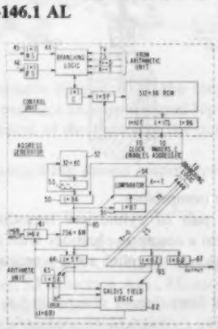
GALOIS FIELD COMPUTER

Elwyn R. Berlekamp, Berkeley, Calif., assignor to Cyclotomics, Inc., Berkeley, Calif.

Filed Jan. 28, 1977, Ser. No. 763,513

Int. Cl.² G06F *11/12*

U.S. Cl. 340—146.1 AL **17 Claims**



1. A stored program digital computer for correcting errors in cyclic encoded streams of data elements, comprising:

(a) an arithmetic unit for performing arithmetic and logical operations upon portions of said data streams to decode said portions of data streams, said arithmetic unit comprising

data memory means having addressable elements for retaining said data elements, multiplier means to supply an operand for multiplication, multiplier register means to supply another operand for multiplication, addend register means for holding an operand for addition, data memory addressng means for retrieving selected data

elements to supply a selected one of said operands, Galois field logic means selectably operable upon said multiplier and multiplicand registers to generate a finite field product, and said Galois field logic means selectably operable on said addend register to form a finite field sum with said product, said data memory means adapted to also retain the results of said Galois field logic means operation and said multiplier means adapted to supply said operand selectably from the result of a prior Galois field logic operation;

(b) an address generator for developing address information for transmittal to said arithmetic unit to address the data memory of said arithmetic unit, said address generator comprising

address generator memory means having addressable elements for retaining information from which addresses are developed for said data memory of said arithmetic unit, address register means for retaining information derived from said address generator memory means, means for transferring the information content of a selected element of said address generator memory means to said address register means, means to modify the content of address register means in accord with a shift register sequence, test register means for retaining a datum and comparator means to detect equality of the content of said address register means with the content of said test register means, and

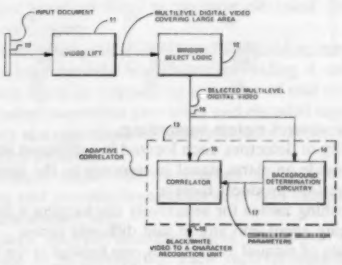
(c) a control unit for controlling the sequence of operations performed by said arithmetic unit and said address generator, said control unit comprising

control memory means for storing the instructions defining the sequence of operations required for effecting corrections in said data streams, said control memory means having addressable elements and means for addressing said control memory means, said control memory addressing means adapted to sequentially address said control memory means, said sequence referenced from a selectable base address, means for selecting said base address, control register means for retaining the content of an elememt of said control memory means, said control memory element controlling the state of said computer, and means for transferring a portion of the content of said address generator in response to a signal defined by said control register content.

4,162,481
ADAPTIVE CORRELATOR FOR VIDEO PROCESSING

Dale R. DuVall, Keller, Tex., assignor to Recognition Equipment Incorporated, Irving, Tex.

Filed Dec. 22, 1976, Ser. No. 753,665
Int. Cl.[2] G06K *9/00*
U.S. Cl. 340—146.3 AG **12 Claims**

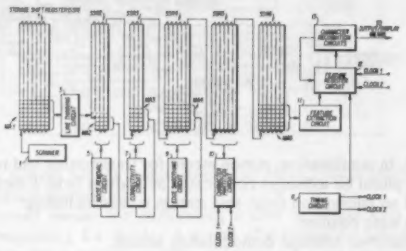


1. A method of continuously referencing the reflectivity of a document surface in order to distinguish the background from printed information thereon, comprising the steps of: optically scanning the document to produce picture elements representative of discrete portions of the document; quantizing a value for each picture element dependent upon the reflectivity of the documents represented by that element; processing groups of picture elements for comparing against each of a plurality of correlation curves, continually and aperiodically selecting one of the correlation curves for selecting a correlation value for each picture element.

4,162,482
PRE-PROCESSING AND FEATURE EXTRACTION SYSTEM FOR CHARACTER RECOGNITION

Chauchang Su, West Bloomfield Township, Oakland County, Mich., assignor to Burroughs Corporation, Detroit, Mich.

Filed Dec. 7, 1977, Ser. No. 858,311
Int. Cl.[2] G06K *9/12*
U.S. Cl. 340—146.3 H **12 Claims**



1. Apparatus for machine recognition of hand-written or machine printed characters comprising:

means for scanning said character;

means for generating a matrix of black and white points from said scanned character, said matrix being stored in a storage shift register;

means for non-iteratively thinning said matrixed character to generate a centerline representative of said matrixed character;

means for removing isolated points in said thinned character matrix;

means for filling in discontinuities appearing in said centerline of said matrixed character;

means for removing spurious points adjoining said centerline of said matrixed character;

means for partitioning said thinned character matrix into a plurality of regions;

means for scanning a plurality of areas of said regions, each of said areas comprising a plurality of subregions, wherein said scanned areas overlap a plurality of said regions and wherein said areas each have a center point;

means for detecting a pattern of black and white points in each of said scanned areas;

means for generating a unique coded value representative of said detected pattern in each of said scanned areas;

means for comparing said coded value with a known set of values corresponding to geometrical stroke features until a match is detected;

means for generating an output signal indicative of the detection of one of said stroke features, in each of said scanned areas;

means for assigning said detected stroke feature to said area containing said center element of each of said scanned areas;

means for detecting sequentially said assigned stroke features for each of said plurality of regions;

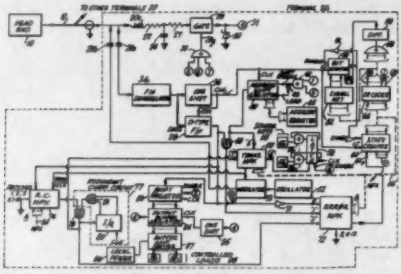
means for comparing said sequentially detected stroke features with a known set of sequences corresponding to characters previously identified; and

means for assigning said matrixed character to said previously identified character having stroke sequences most closely corresponding to those detected form said matrixed character.

4,162,483
BILATERAL MASTER STATION-PLURAL SATELLITE STATION SIGNALLING APPARATUS

Alan W. Entenman, Hicksville, N.Y., assignor to Intech Laboratories, Inc., Bohemia, N.Y.

Filed Apr. 1, 1977, Ser. No. 783,740
Int. Cl.[2] H04N *1/44;* H04B *1/06;* H04Q *9/00*
U.S. Cl. 340—147 R 19 Claims

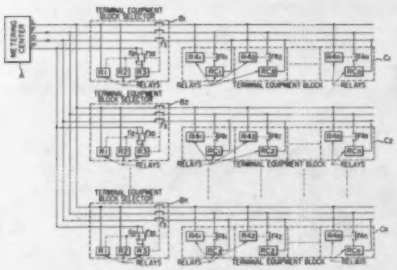


1. In combination, station means for transmitting and receiving plural bit messages comprising an address field, a data field and an encryption field; said station means including:
a state counter;
received message demodulating means;
station address storing register means;
error signal multiplexer means having plural data inputs, an output for selectively setting said state counter to a predetermined state, and addressing control means connected to the output of said state counter for interconnecting one of said multiplexer data inputs with said multiplexer output depending upon the content of said state counter;
address error means having inputs connected to said station address storing register means and said demodulating means and an output connected to a first one of said plural error signal multiplexer inputs; and
encryption field verifying means having an input connected to said demodulating means and an output connected to a second input of said error signal multiplexer means.

4,162,484
DATA COLLECTION SYSTEM

Takeshi Abe, Yokohama; Keishin Tsuchiya, Tachikawa; Kazuhito Saito; Toshiaki Mizuta, both of Kawasaki, and Ichiro Yoshihara, Funabashi, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed May 18, 1977, Ser. No. 798,019
Claims priority, application Japan, May 26, 1976, 51-60776
Int. Cl.[2] H04Q *9/00*
U.S. Cl. 340—150 4 Claims

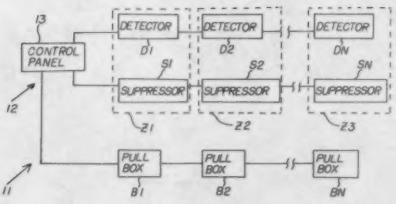


1. A data collection system of the type wherein a metering center sequentially selects a number of remote terminal equipment block selectors and then through the selected terminal equipment block selector sequentially selects a plurality of terminal equipment units connected to said selected selector thereby reading the data of said terminal equipment unit into said metering center, comprising:
a terminal equipment selection bus comprising a plurality of terminal equipment selection lines for selecting one of said terminal equipment block selectors and for subsequently selecting one of the terminal equipment units connected to said one block selector;
first means at said metering center for sequentially applying first and second corresponding coded signals of limited duration to said terminal equipment selection bus;
power lines for coupling said metering center to said terminal equipment block selectors;
a data output bus comprising lines for coupling said metering center to said terminal equipment block units;
second means associated with said one terminal equipment block selector comprising latching means for coupling said terminal equipment selection bus and said data output bus to all of the terminal equipment units connected to said one terminal equipment block selector, in response to said sequentially applied corresponding first and second coded signals;
third means at said metering center for applying a third coded signal to said terminal equipment selection bus, after said first and second coded signals have terminated, to energize a selected one of the terminal equipment units connected to said one selected terminal equipment block selector, to cause meter data from said energized unit to be transferred to said metering center, via said data output bus; and
fourth means for de-energizing said second means after termination of said third coded signal, to uncouple said terminal equipment selection bus from said terminal equipment units connected to said one terminal equipment block selector.

4,162,485
FIRE PROTECTION APPARATUS

Enio Facchini, Framingham, and Carl I. Swanson, Boylston, both of Mass., assignors to Walter Kidde and Company, Inc., Clifton, N.J.

Division of Ser. No. 595,626, Jul. 14, 1975, Pat. No. 4,017,844.
This application Jan. 7, 1977, Ser. No. 757,615
Int. Cl.[2] G08B *25/00*
U.S. Cl. 340—289 7 Claims



1. A fire control system comprising:
a plurality of detectors, each located in a different zone so as to provide an alarm signal in response to the presence of combustion products therein;
extinguishing means for selectively discharging a fire extinguishing agent into any of said different zones;
a plurality of manual pull stations, one located in the immediate vicinity of and associated with each of said zones and manually operable to induce discharge thereinto of said extinguishing agent from said extinguishing means; each of said pull stations comprising signal means energizable to provide a visual indication of an abnormal condition, a box for mounting on a support surface, a first electrical switch mounted in said box and manually operable from an open to a closed position, latch means for latching said

first switch in said closed position, a second electrical switch mounted in said box and manually operable from an open to a closed position so as to provide an initiation signal for initiating release of said extinguishing agent into an associated zone, restoring means for returning said second switch to said open position after being manually actuated into said closed position, and mechanical indicator means for providing a visual indication in response to movement of said first switch into said closed position; and

control circuit means connecting said detectors in each zone with said pull station associated with that zone, said control circuit means energizing said signal means in a given pull station in response to an alarm signal from an associated detector and comprising a control panel interconnected between all of said detectors, said extinguishing means, and all of said pull stations, said control panel providing an alert signal in response to operation of one of said first electrical switches to a closed position.

4,162,486

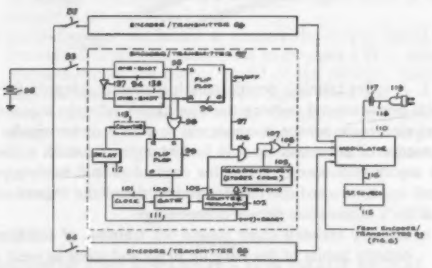
ENCODED ELECTRICAL CONTROL SYSTEMS

Leopold S. Wyler, Beverly Hills, Calif., assignor to TRE Corporation, Beverly Hills, Calif.

Division of Ser. No. 660,686, Feb. 23, 1976, Pat. No. 4,141,332. This application Jan. 7, 1977, Ser. No. 757,632

Int. Cl.[2] H04M *11/04*

U.S. Cl. 340—310 A **3 Claims**



2. An encoded electrical control system for remote control of devices powered from a common electrical distribution system, comprising:

a controller including a switch and a control member, and an associated encoder/transmitter providing a unique, encoded signal in response to actuation of said switch, said encoder/transmitter providing said encoded signal repetitively at a repetition rate determined by the setting of said control member,

transmission means for transmitting the encoded signals from said encoder/transmitter over said electrical distribution system, and

respective receiver/decoder means associated with each device to be controlled, each receiver/decoder means being connected to receive the encoded signals transmitted over said distribution system and to effectuate control of said respective device in response to receipt only of the unique code associated with that specific receiver/decoder means, and wherein the associated receiver/decoder means effectuates control of the associated device in proportion to the repetition rate of said encoded signal.

4,162,487

SYSTEM FOR THE TRANSMISSION AND RECEPTION OF ENCODED INFORMATION

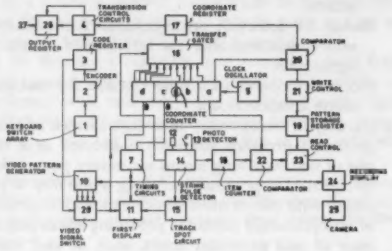
Malcolm Macaulay, 34 Jacka Crescent, Campbell, A.C.T., Australia (2601)

Filed Jul. 7, 1976, Ser. No. 703,278

Claims priority, application Australia, Jul. 8, 1975, PC2287

Int. Cl.[2] G06F *3/14*

U.S. Cl. 340—744 **7 Claims**



1. A system for the transmission and reception of selected information comprising

keyboard means for performing a first encoding step of designating for display a group of information selected from the total information and generating an associated first code signal,

means for displaying said designated group of information,

photodetector means associated with said display,

means for performing a second encoding step designating an item within said selected group and means for generating a second code signal, representative of said designated item,

means for combining both said signals to give a combined signal,

means for transmitting said combined signal in association with said means for receiving said combined signal,

means for separating said combined signal into said first and said second code signal,

means for decoding said first code signal to designate a particular character generator corresponding to the selected encoded group,

decoder means responsive to said second code signal to select the encoded item within the selected group, and

means responsive to said designated character generator to record and to display the selected item.

4,162,488

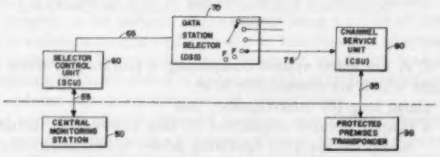
ALARM SYSTEM

Howard M. Silverman, Livingston; David G. Barleen, Parsippany, and Thomas R. DeLalla, Flanders, all of N.J., assignors to Emergency Products Corporation, Parsippany, N.J.

Filed Mar. 11, 1977, Ser. No. 776,753

Int. Cl.[2] G08B *26/00*

U.S. Cl. 340—505 **28 Claims**



1. An alarm system for monitoring conditions at a plurality of protected premises comprising:

switching means having a primary port and a plurality of secondary ports and responsive to successive appearances of a predetermined signal at its primary port for sequen-

tially establishing connections between said primary port and each of said plurality of secondary ports;

central monitoring station apparatus connected to said switching means primary port, said central monitoring station apparatus including:

means for successively generating said predetermined signal at equally spaced predetermined intervals;

means operative at the termination of each occurrence of said predetermined signal for transmitting a START signal over the connection established by said switching means;

means for detecting predetermined tones received over said connection after the termination of said START signal; and

means responsive to a tone absence for recognizing an alarm condition; and

a plurality of transponder units each located at a respective protected premises and each connected to a respective one of said switching means secondary ports, said respective protected premises including a plurality of protected zones, with one or more sensor elements disposed at each of said protected zones for providing status indications of each of said protected zones, each of said transponder units including:

clock means responsive to receipt of said START signal over said switching means connection for defining a plurality of time slots each corresponding to one of said protected zones;

means for transmitting selected ones of said predetermined tones during corresponding ones of said plurality of time slots over said connection; and

means responsive to an indication from a sensor element of said alarm condition in one of said protected zones for inhibiting the transmission of tons in the time slot corresponding to said one protected zone, so as to produce said tone absence for recognition by said recognizing means in said central monitoring station apparatus.

4,162,489

FIRE ALARM SYSTEM COMPRISING A PLURALITY OF ALARMS WHICH MAY BE OPERATED BY WAY OF AN ALARM LOOP

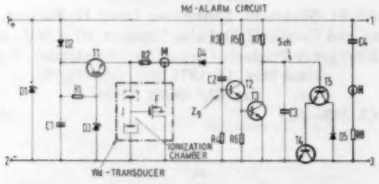
Peer Thilo, and Otto W. Moser, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 4, 1977, Ser. No. 821,837

Claims priority, application Fed. Rep. of Germany, Aug. 24, 1976, 2638068

Int. Cl.[2] **G08B** *17/00*

U.S. Cl. 340—518 **7 Claims**



1. A fire alarm system comprising: a plurality of alarm circuits which are connectible in an

alarm loop for interrogation; and

a central control connected to said alarm loop including means for applying operating power to said alarm circuits and means for receiving signals generated by said alarm circuits,

each of said alarm circuits comprising:

a detector for detecting a predetermined characteristic of a fire and generating a representative first signal, signaling means connected to said detector and operated by said first signal to amplify and place the same as an amplified second signal on said loop,

said signaling means including a timing circuit having a load resistance connected in parallel to said loop by said signaling means.

4,162,490

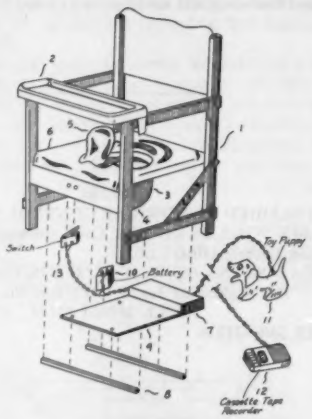
TOILET TRAINING DEVICE

Fang-Cheng Fu, and Chien-Hung Fu, both of 792 Oak Ridge Ct., Brighton, Mich. 48116

Filed Jan. 26, 1978, Ser. No. 872,568

Int. Cl.[2] **G08B** *21/00;* **A47K** *11/02*

U.S. Cl. 340—603 **7 Claims**



1. A toilet training device which is readily adapted for use with conventional nursery training chairs wherein a non-contact electronic sensor is employed to detect dielectrically the presence of urine and stool in said receptacle which is placed on top of said sensing board for control of said battery-powered toy to reward the toddler and to signal the trainer when toddler's elimination begins comprising:

a. nursery training chair means for training of toddlers in orderly habits of discharging urine and stool as well, said nursery training chair means comprising said seat surface with said deflector, said receptacle and said fixture;

b. non-contact electronic sensor means, adapted to be mounted on said nursery training chair, for detecting said urine and stool in said receptacle;

c. sensing board means, adapted to provide said support for said receptacle and said sensing element;

d. a battery;

e. a diode having an anode and a cathode series connected with said battery source, said anode being adapted to be coupled to said positive terminal of said battery source to provide reverse polarity protection;

f. battery-powered toy means, adapted to be coupled to said non-contact electronic sensor, to provide said pleasant sound upon contact of said urine and stool against said inner surface of said receptacle;

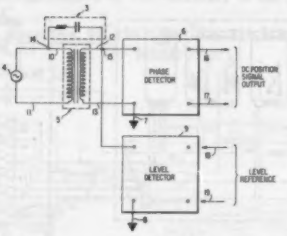
g. pressure sensitive switch means, adapted to be mounted on said nursery training chair, to turn the system on when the nursery training chair is occupied; and

h. means coupling said non-contact electronic sensor, said battery, said diode, said pressure sensitive switch, and said battery-powered toy.

4,162,491
INDUCTIVE POSITION SENSOR WITH MINIMUM OUTPUT SIGNAL LEVEL CAPACITIVELY COUPLED TO INDICATE FAILURE OF DEVICE

George G. Gochis, Shelton, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Jan. 11, 1978, Ser. No. 868,483
Int. Cl.[2] G08B 21/00
U.S. Cl. 340—646 1 Claim



1. Apparatus for indicating the angular position of one object with respect to another comprising:

a source of power;

an inductive position sensor having a primary coil connected to the source of power and a secondary coil, said secondary coil magnetically coupled to the primary coil and mounted for movement relative thereto in a manner which varies the magnetic coupling as relative movement occurs thereby producing an output signal on the secondary coil proportional to said relative movement, said inductive position sensor having a point of zero output in the middle of its range of positions;

a coupling capacitor connected from the primary coil to the secondary coil to impress a minimum signal level at the output of the secondary coil;

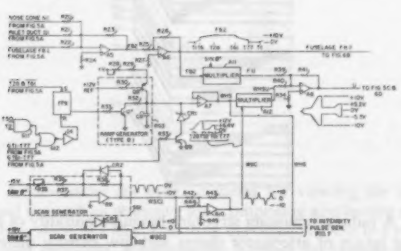
a phase detector connected to receive the output signal of the inductive position sensor and to generate a D.C. signal proportional to the output signal of the position sensor, but independent of the minimum signal level; and

a level detector connected to the output of the position sensor to receive the minimum signal level, to compare said minimum signal level to a predetermined reference level, and to generate an alarm signal in response to changes in the minimum signal level.

4,162,492
METHOD AND APPARATUS FOR IMAGE SIGNAL GENERATION AND IMAGE DISPLAY

Robert E. Jones, Jr., Timonium, Md., assignor to AAI Corporation, Cockeysville, Md.

Filed Aug. 25, 1972, Ser. No. 283,673
Int. Cl.[2] G06F 3/14
U.S. Cl. 340—723 66 Claims



1. Image signal forming means, comprising

means for forming a first analog envelope-forming signal, the effective envelope amplitude of which varies in time as a function of a sectional outline bounding a portion of a first area desired to be imaged,

means for forming a second analog envelope-forming signal in time-overlapping timed phase relation with said first signal and the effective envelope amplitude of which varies in time as a function of a further sectional outline bounding a portion of a respective second area desired to be simultaneously imaged,

means for adding said first and second signals and for forming as a function thereof a composite envelope-forming signal the effective envelope of which varies in time as a function of both of said first and second areas,

means for forming a common time reference ramp trace-sweep signal in time-overlapping relation with, and for use in common with, said composite envelope-forming signal to effect trace movement in a direction transverse to trace movement effected by said composite envelope-forming signal,

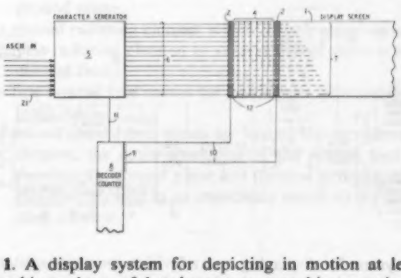
means for generating an A.C. carrier signal varying through multiple repetitive cycles within the time span duration of one occurrence of said common time ramp reference signal,

and means for producing an envelope image-forming signal formed of repetitive cycles corresponding in frequency to said A.C. carrier signal, the successive peak-to-peak amplitude of which repetitive cycles is a function of said composite envelope-forming signal.

4,162,493
GRAPHIC DISPLAY SYSTEMS

John Ross, Claremont, and Amedeo F. Sala-Spini, Morley, both of Australia, assignors to Random Electronics International Pty. Limited, New South Wales, Australia

Filed Jan. 7, 1977, Ser. No. 757,734
Claims priority, application Australia, Jan. 13, 1976, 4507/76
Int. Cl.[2] G06F 3/14; G09F 9/00
U.S. Cl. 340—752 20 Claims



1. A display system for depicting in motion at least one graphic made up of dot elements arranged in a matrix form of dot rows and at least two dot columns, said graphic being displayed by creating a series of stationary images in successive display state periods, with the graphic appearing to move across the display system as different stationary images are created, a dot row of the matrix being a group of cells of the matrix arranged parallel to the direction of apparent motion of the graphic, a dot column of the matrix being a group of cells of the matrix arranged orthogonally to the direction of apparent motion of the graphic, said series of stationary images advancing in the direction of apparent motion at the rate of one dot column per dislay state period, comprising:

an array of picture element sources, said picture element sources arranged in a stationary element matrix of element columns and element rows generally corresponding to the dot matrix such that every element row, being a group of cells arranged parallel to the direction of apparent motion of the graphic, contains picture element sources spaced apart throughout its length, and every element column, being a group of cells arranged orthogonally to the direction of apparent motion, has zero to n picture element

sources wherein n is equal to the number of element rows in the element matrix, the number of picture element sources in said element matrix being less as compared to the number of dot elements in the graphic matrix such that if, while displaying a graphic having at least two adjacent dot columns of its matrix occupied, a single display state period is sustained, then the resulting momentarily stationary image appears incomplete and unrecognizeable,

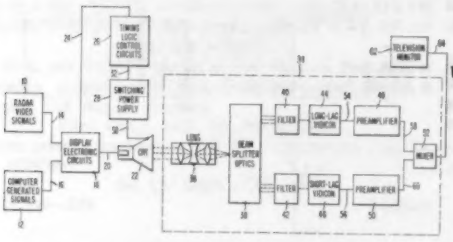
sampling means for sampling proportions of the graphic matrix at each display state period to produce signal means representing a fragment of the graphic matrix, said signal means cooperating with said picture element sources to illuminate each picture element source in a display state period to represent a dot element of the graphic matrix only when the position of a dot element in the fragment of the graphic matrix corresponds with the position of a picture element source, the series of stationary images being formed at such a rate that the sum of the durations of the display state periods from a given display of a dot element of the graphic matrix at a picture element source in a given element row of the element matrix until the next display of that dot element at the next picture element source in the same element row and in the direction of apparent motion is more than two display state periods and does not exceed 250 milliseconds.

4,162,494

METHOD AND APPARATUS FOR DISPLAYING RADAR VIDEO REGISTERED WITH COMPUTER GENERATED DATA ON A TELEVISION MONITOR

James R. Bacon, Erdenheim, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Apr. 28, 1978, Ser. No. 900,871
Int. Cl.[2] G01S *7/06;* H04N *9/09*
U.S. Cl. 343—5 EM **8 Claims**



1. A system for displaying on a television monitor registered signals derived respectively from time-shared radar video signals and computer generated signals comprising:

a cathode ray tube capable of displaying images in at least two colors, said time-shared radar video signals and said computer generated signals being imaged by said cathode ray tube in respective first and second colors,

a television camera positioned in proximity to said cathode ray tube for photographing the two-color display imaged thereon, said television camera including optical means for deriving from said two-color display, a pair of displays physically separated into two paths and exhibiting respectively said first and second colors, a long-lag vidicon interposed in one of said paths to sense the images of said radar video signals appearing in the first color and a short-lag vidicon interposed in the other of said paths to sense the images of said computer data signals appearing in the second color, and

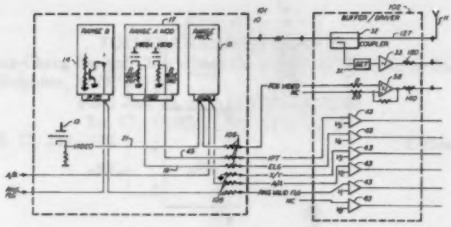
means coupling the respective electrical outputs from said long-lag vidicon and short-lag vidicon in common to said television monitor.

4,162,495

UPDATING AN EN-ROUTE TACAN NAVIGATION SYSTEM TO A PRECISION LANDING AID

Robert S. Prill, Parsippany, N.J., assignor to The Singer Company, Little Falls, N.J.

Filed Jul. 27, 1977, Ser. No. 819,569
Int. Cl.[2] G01S *9/14*
U.S. Cl. 343—7.3 **14 Claims**



11. A method of obtaining accurate signals from a low accuracy Tacan set comprising:

(a) sampling the first pulse of each doublet transmitted by the Tacan set;

(b) delaying said doublet by an amount proportional to the fixed ground station delay to develop a start signal;

(c) picking off from the Tacan receiver the video signal therein; and

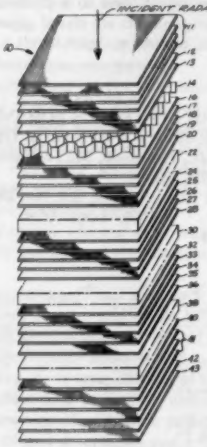
(d) selecting as a stop signal the first video pulse of each doublet received which is identified by the Tacan set as a proper response.

4,162,496

REACTIVE SHEETS

David N. Downen, Tulsa, Okla., and Bert A. Eichenberger, Panorama City, Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 3, 1967, Ser. No. 628,170
Int. Cl.[2] H01Q *17/00*
U.S. Cl. 343—18 A **25 Claims**



17. A radar attenuating structure having a plurality of alternating layers of attenuator sheets and low density dielectric material forming an interference type attenuator wherein:

at least a portion of said attenuator sheets comprise a fabric impregnated with a resin having a dispersion of semiconductive particles therein; and

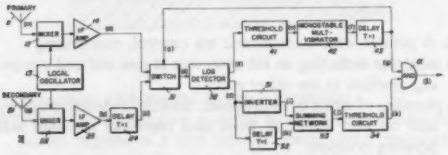
at least a portion of said attenuator sheets further comprise a dispersion of conductive particles dispersed with said semiconductive particles in said resin.

4,162,497

SIDE LOBE SUPPRESSION DEVICE FOR A DIRECTIONAL RECEIVING SYSTEM

Burton L. Hulland, Glenwood Landing, and Arnold P. Weinstein, Flushing, both of N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 18, 1963, Ser. No. 310,518
Int. Cl.² H04B *1/10*
U.S. Cl. 343—100 LE **8 Claims**



1. A side lobe suppression device for use in a directional receiver system comprising

first means for receiving first RF signals and converting them to first IF signals;

second means for receiving second RF signals and converting them to second IF signals;

first delay means connected to the second receiving means for delaying the second IF signals a predetermined time;

third means operatively connected to said first means and said first delay means for time sharing said first and second IF signals;

fourth means operatively connected to said third means for demodulating said first and second time-shared IF signals; and

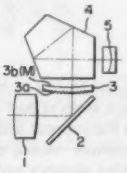
fifth means operatively connected to said fourth means for comparing one of said first and second demodulated signals with the other, said fifth means including means for inverting the demodulated signals carrying the same information as said delayed IF signals, and a second delaying means for delaying the other demodulated signals a predetermined amount.

4,162,498

VIEWFINDER FOR REFLEX CAMERA

Sei Matsui, Chiba, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Dec. 2, 1977, Ser. No. 857,029
Claims priority, application Japan, Dec. 7, 1976, 51-163071
Int. Cl.² G03B *19/12*
U.S. Cl. 354—155 **8 Claims**



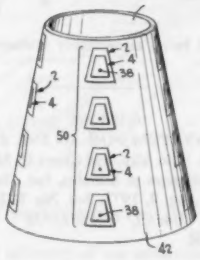
1. A viewfinder for reflex cameras for viewing the image formed through an objective lens comprising a reflecting member for reflecting a light flux from the objective lens in a predetermined direction, a transparent member for passing therethrough the reflected light from said reflecting member, and a mat surface located on the exit side of said transparent member and convexly curved toward the entrance side of said transparent member, whereby the image plane formed by the light flux passed from said objective lens through said transparent member is coincident with the mat surface convexly curved toward said entrance side.

4,162,499

FLUSH-MOUNTED PIGGYBACK MICROSTRIP ANTENNA

Howard S. Jones, Jr., Washington, D.C.; Frederick G. Farrar, Kensington, and Daniel H. Schaubert, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 26, 1977, Ser. No. 845,528
Int. Cl.² H01Q *1/38, 1/28*
U.S. Cl. 343—700 MS **10 Claims**



1. A piggyback radiating system which comprises: p1 a ground plane;

a first radiating element which is flush mounted above the ground plane;

a second radiating element which is flush mounted over the first radiating element in an area where there is minimal current flow;

a first coaxial feed means for feeding the first radiating element; and

a second coaxial feed means for feeding the second radiating element, the outer conductor of the second feed means shorting the ground plane and the first radiating element, therefore serving as an impedance match to the first radiating element.

4,162,500

RIDGED WAVEGUIDE ANTENNA SUBMERGED IN DIELECTRIC LIQUID

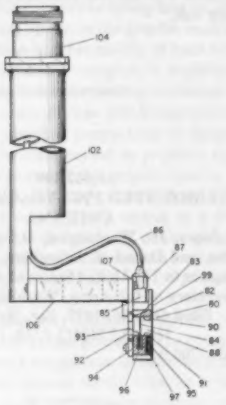
John H. Jacobi, Bowie, and Lawrence E. Larsen, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Continuation-in-part of Ser. No. 842,137, Oct. 14, 1977, Pat. No. 4,135,131. This application Mar. 29, 1978, Ser. No. 891,256
Int. Cl.² G01R *27/04;* H01Q *13/06*
U.S. Cl. 343—772 **9 Claims**

1. A system for remote microwave interrogation and imaging of a biological target comprising:

a. at least one microwave antenna probe with a rectangular ridged waveguide having a radiating open aperture at one end which operates at S-band frequencies, and

b. a liquid medium selected from the group consisting of water or deuterium oxide, said microwave antenna probe



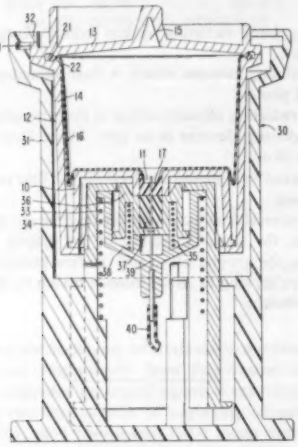
and the target being completely immersed in said liquid medium.

4,162,501

INK SUPPLY SYSTEM FOR AN INK JET PRINTER

Charles S. Mitchell, Palo Alto, and Glenn D. Maxwell, Saratoga, both of Calif., assignors to Silonics, Inc., Sunnyvale, Calif.

Filed Aug. 8, 1977, Ser. No. 822,538
Int. Cl.[2] G01D *15/16*
U.S. Cl. 346—140 R **24 Claims**



1. A sealed pressurizable and interchangeable ink cartridge for an ink jet printer having a cartridge receptacle with an ink supply connector protrudable therefrom, said cartridge comprising:

a housing adapted to be received by the printer receptacle,

a piston slidably engaged within said housing,

means for providing a fluid seal between the piston and said housing as it slides back and forth therein, and

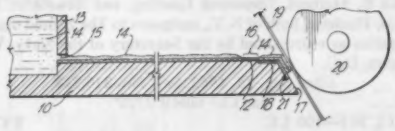
a septum carried by said piston and forming a sealed inlet that is penetratable by said receptacle connector, whereby fluid communication is achieved between the interior of the cartridge and the receptacle and further whereby the cartridge can be pressurized by moving said piston with respect to said housing to reduce the fluid volume therein.

4,162,502

PRINTER WITH ELECTROSTATIC INK CONTROL

Paolo Cielo, and William D. Westwood, both of Ottawa, Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed May 5, 1978, Ser. No. 903,187
Int. Cl.[2] G01D *15/18*
U.S. Cl. 346—140 R **10 Claims**



1. A printer with electrostatic ink control, comprising:

a substrate including an ink reservoir at one end and a printing position at the other end;

a plurality of strips of hydrophilic material extending side by side on said substrate from said reservoir towards said printing position;

at least one orifice in a wall of said reservoir for the supply of ink to said strips;

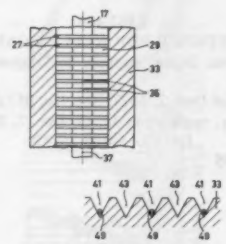
electrostatic means associated with each strip for controlling the flow of ink along said strip to said printing position.

4,162,503

PRINTING HEAD WITH TAUT WIRE ELECTRODES

Theodorus H. Potma, Eindhoven, and Gerhardus T. H. Tomassen, Someren, both of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 15, 1977, Ser. No. 860,703
Claims priority, application Netherlands, Feb. 18, 1977, 7701721
Int. Cl.[2] G03G *17/00*; G01D *15/06*
U.S. Cl. 346—163 **8 Claims**



1. A recording device having a backing member, and a recording head having a support and a plurality of recording electrodes mounted in the support and arranged in a row, for marking an electro-sensitive record carrier moving along a path between the backing member and the electrodes perpendicular to the row, wherein

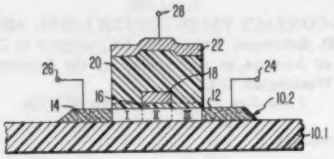
the plurality of electrodes is formed by a plurality of taut wires disposed parallel to each other, each wire being supported in grooves at two locations in a unitary support equally spaced from a central contact region, the wire extending freely between the grooves, said contact regions being arranged in a straight line and the backing member being arranged opposite said line.

4,162,504

FLOATING GATE SOLID-STATE STORAGE DEVICE

Sheng T. Hsu, Lawrenceville, N.J., assignor to RCA Corp., New York, N.Y.

Filed Dec. 27, 1977, Ser. No. 864,766
Int. Cl.[2] H01L *29/78*
U.S. Cl. 357—23 14 Claims



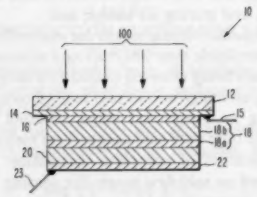
1. A floating gate storage device comprising:
a body of semiconductor material having a pair of semiconductor regions of a first type of conductivity embedded therein and spaced a given distance one from the other;
an intermediate semiconductor region of an opposite type conductivity defining the space between the pair of regions;
a first layer of insulating material having a given thickness disposed on the intermediate region;
a floating gate member, the width of which is narrower than the given distance between the regions of first conductivity, centrally disposed over the intermediate region and insulated therefrom by the first layer of insulating material;
a second layer of insulating material having a greater thickness than that of the first insulating layer disposed on both the floating gate member and those portions of the first insulating layer not covered by the floating gate member; and
a control gate member, the width of which is the same as the given distance between the regions of first conductivity, centrally disposed on the second insulating layer, over the intermediate region, and insulated from the floating gate member by the second layer of insulating material.

4,162,505

INVERTED AMORPHOUS SILICON SOLAR CELL UTILIZING CERMET LAYERS

Joseph J. Hanak, Lawrenceville, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,564
Int. Cl.[2] H01L *27/14*
U.S. Cl. 357—30 11 Claims



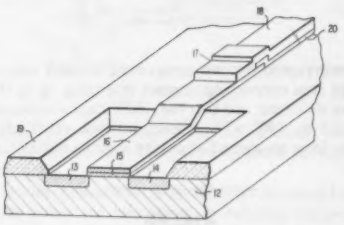
1. In an amorphous silicon solar cell which comprises a body of hydrogenated amorphous silicon with a means for ohmically contacting said body of hydrogenated amorphous silicon incident to solar radiation and a metal layer ohmically contacting said body of hydrogenated amorphous silicon opposite to said incident surface, the improvement which comprises:
a transparent high work function metal cermet layer disposed between and contacting said means for forming an ohmic contact and said body of hydrogenated amorphous silicon; and
a thick film cermet layer disposed between said metal layer ohmically contacting said body of hydrogenated amorphous silicon opposite to said incident surface and said body of hydrogenated amorphous silicon.

4,162,506

SEMICONDUCTOR INTEGRATED CIRCUIT DEVICE WITH DUAL THICKNESS POLY-SILICON WIRING

Sakae Takei, Yokohama, Japan, assignor to Tokyo Shibaura Electric Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 786,595, Apr. 11, 1977, abandoned.
This application Jul. 10, 1978, Ser. No. 923,223
Claims priority, application Japan, Apr. 27, 1976, 51-47190
Int. Cl.[2] H01L *29/04*
U.S. Cl. 357—59 3 Claims



1. A high-speed semiconductor integrated circuit device comprising:
a semiconductor substrate of one conductivity type having source and drain regions formed therein of another conductivity type;
an insulating oxide film formed on the substrate bridging the source and drain regions;
a gate electrode layer formed by a first polycrystalline silicon film disposed and etched on the insulating oxide film; and
an interconnecting wiring layer formed by a second polycrystalline silicon film connected with the gate electrode layer, the second polycrystalline silicon film having a thickness greater than the thickness of the first polycrystalline silicon film;
whereby the resistance of the interconnecting wiring layer is reduced as a result of the greater thickness of the second polycrystalline silicon film made possible by the fact that the gate electrode layer and interconnecting wire layer are not formed in a body, thereby correspondingly increasing the speed of the semiconductor integrated circuit device without increasing the thickness of the gate electrode layer, and therefore without increasing gate electrode layer side etching.

4,162,507

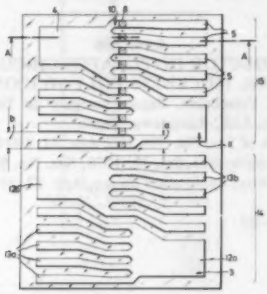
CONTACT STRUCTURE FOR A MULTIPLE SEMICONDUCTOR COMPONENT

Konrad Fischer, Bad Rappenau, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs G.m.b.H., Frankfurt, Fed. Rep. of Germany

Filed Dec. 28, 1977, Ser. No. 865,596
Claims priority, application Fed. Rep. of Germany, Jan. 22, 1977, 2702571
Int. Cl.[2] H01L *23/48, 29/44, 29/52*
U.S. Cl. 357—68 10 Claims

1. A contact structure for a multiple component semiconductor device made up of a number of two terminal individual components having individual finger-shaped connections for one contact of each component respectively and a large area connecting contact to which are connected the other contacts

of a whole group of components, characterised in that a group of connecting fingers arranged in comb shape and fanned out extend from one outer edge of the contact structure to the centre of the structure so that the spacing between two adjacent contact fingers decreases inwardly; that these connecting



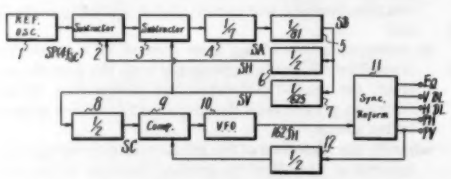
fingers—interrupted by one component in each case—merge into a large area connecting contact extending up to the other edge of the structure; and that two individual structures of this type rotated by 180° with respect to each other are joined together to form an overall structure approximately forming a rectangle.

4,162,508

SYNCHRONIZING SIGNAL GENERATOR FOR PAL-TV SIGNAL PROCESSING SYSTEM

Mitsushige Tatami, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed May 11, 1978, Ser. No. 904,938
Claims priority, application Japan, May 18, 1977, 52/57278
Int. Cl.² H04N 9/47
U.S. Cl. 358—18 **7 Claims**



1. A synchronizing signal generator for a PAL-TV signal processing system comprising:

a pulse oscillator providing a pulse train with a frequency $n \cdot f_{SC}$ satisfying the following equation

$$n/m \cdot f_{SC} = 2K \cdot f_H + l_1/M \cdot f_H + l_2/m \cdot f_V$$

in which f_{SC}, f_H and f_V are the color subcarrier frequency, the horizontal synchronizing frequency and the vertical synchronizing frequency, respectively, for the PAL-TV signal, and K, m, n, l_1 and l_2 are respective integers;

pulse subtracting means for subtracting l_1 pulses during each horizontal period and l_2 pulses during each vertical period from said pulse train;

frequency divider means receiving the output of said subtracting means and providing therefrom pulses with said horizontal and vertical synchronizing frequencies;

a variable frequency oscillator having a center frequency of $P \cdot f_H$ in which P is an integer;

a synchronizing signal reforming circuit driven by the oscillation output of said variable frequency oscillator and providing therefrom synchronizing output signals for the PAL-TV signal; and

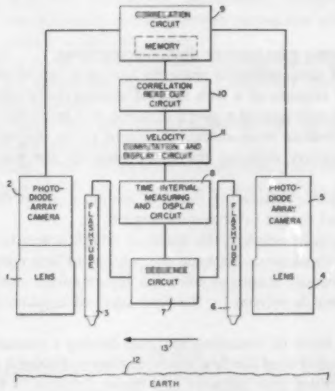
phase locked loop means for controlling said variable frequency oscillator in dependence on comparison of pulses from said frequency divider means with synchronizing output signals from said reforming circuit.

4,162,509

NON-CONTACT VELOCIMETER USING ARRAYS

Kenneth D. Robertson, Springfield, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 21, 1978, Ser. No. 917,754
Int. Cl.² G01P 3/36
U.S. Cl. 356—28 **10 Claims**



1. A non-contact velocimeter comprising:

first means for sensing an image for a first given period of time and for storing the sensed image;

second means for sensing an image for a second period of time and for storing the sensed image whereby said second means operates at a controllable time interval after the occurance of said first period of time;

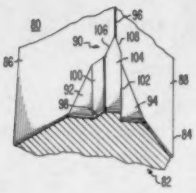
comparison means for comparing the image stored on said first means for sensing and storing an image with the image stored on said means for sensing and storing an image, said comparison means being coupled to said first means for sensing and storing an image and to said second means for sensing and storing an image and providing an output indication of the degree of correlation between said image stored on said first means for sensing and storing an image and said image stored on said second means for sensing and storing an image; and

adjustable sequence timing means for controlling the length of said controllable time interval, said adjustable sequence timing means being coupled to said first means for sensing and storing an image and to said second means for sensing and storing an image and being adjusted to vary said controllable time until said comparison means provides an output indication of complete correlation between said image stored on said first means for sensing an image and said image stored on said second means for sensing and storing an image whereby velocity is computed by dividing the distance between said first means for sensing and storing an image and said second means for sensing and storing an image by said controllable time interval when said complete correlation has been achieved, said first means for sensing and storing an image being located a known distance from said second means for sensing and storing an image.

4,162,510
KEEL-TIPPED STYLUS FOR VIDEO DISC SYSTEMS

Eugene O. Keizer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 25, 1977, Ser. No. 781,317
Int. Cl.[2] G11B *3/44*
U.S. Cl. 358—128 10 Claims



1. In a playback system including a turntable for rotating a disc record having signals prerecorded in the bottom of a spiral groove of a given width and disposed on the surface of said record; a pickup stylus for playing back said prerecorded signals when stylus/record relative motion is established; said pickup stylus comprising:

a dielectric support element having a tip which is defined by a prow and a substantially flat rear surface remote from said prow;

the terminating portion of said rear surface being formed by a bottom edge, a pair of side edges extending substantially orthogonally from the ends of said bottom edge and a pair of laterally extending edges originating from the ends of said side edges remote from said bottom edge; the maximum separation between said side edges being less than said given groove width;

said tip additionally including a bottom surface extending from said bottom edge and terminating at said prow, a pair of substantially parallel side surfaces extending from said side edges, a pair of laterally extending surfaces originating from said laterally extending edges, and surfaces extending from the ends of said parallel side surfaces remote from said rear surface and converging at said prow;

wherein said stylus is arranged in said groove for playback such that, at the point of reception of said stylus, (a) said bottom edge is disposed transverse to said groove and in contact with said groove bottom, (b) said parallel side surfaces are disposed in the direction of said groove, and (c) the movement of said record extends from said prow toward said bottom edge;

wherein said stylus is dimensioned such that said laterally extending surfaces are spaced from said record surface upon stylus reception in said groove; and

said stylus further having a layer of conductive material adherent to said rear surface.

4,162,511
VELOCITY CORRECTION SYSTEM FOR VIDEO DISC PLAYER

Minoru Toda; Susumu Osaka, both of Machida, and Yasushi Matsumoto, Narashino, all of Japan, assignors to RCA Corporation, New York, N.Y.

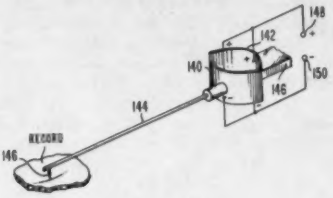
Filed Apr. 13, 1978, Ser. No. 896,056
Claims priority, application United Kingdom, Apr. 19, 1977, 16280/77
Int. Cl.[2] G11B *3/10*
U.S. Cl. 358—128 9 Claims

1. A pickup cartridge for use in a velocity adjusting system for opposing undesired cyclical variations in the relative velocity between a rotating disc record and a pickup means which is positioned adjacent to successive regions of a spiral information track disposed on the surface of said disc record for playing back signals recorded along said track; said pickup cartridge being removably subject to reception in a carriage which is translated along a path radially disposed relative to said disc record in correlation with radial motion of said pickup means during playback of said recorded signals; said system including means for developing a correction signal in response to cyclical variations of said relative velocity; said pickup cartridge comprising:

(A) a demountable cartridge housing;

(B) a pickup arm mechanically supporting said pickup means at one end thereof;

(C) a piezoelectric bimorph element having a first edge and a second edge; said first edge being mechanically secured to said cartridge housing such tht said piezoelectric element is disposed within the confines of said cartridge



housing; said second edge being mechanically secured to the other end of said pickup arm remote from said pickup means; and

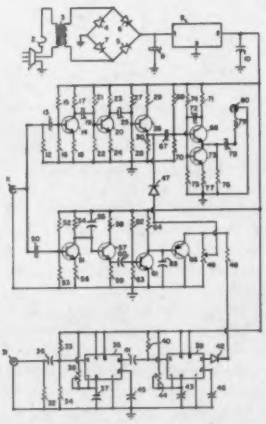
(D) terminals disposed on said cartridge housing for applying the output of said signal developing means to said piezoelectric bimorph element when said cartridge is received in said carriage;

said piezoelectric bimorph element being so arranged that said application of said correction signal causes translation of said pickup means relative to said record along said information track throughout the range of said translation in a manner that opposes said cyclical variations.

4,162,512
VIDEO PERIODICITY INDICATOR

Douglas W. Garlinger, 225 Highwood Dr., Westfield, Ind. 46074

Filed Feb. 23, 1978, Ser. No. 880,596
Int. Cl.[2] H04N *7/02*
U.S. Cl. 358—139 3 Claims



1. An electronic signal processor, comprising the combination of a video amplifier having at the input of said video amplifier a means of accepting a video signal and at the output of said video amplifier a means of providing a video signal,

means disposed in said video amplifier to incorporate a periodicity indicator signal into said video signal as said video signal passes through said video amplifier; a periodicity indicator signal generator having at the input of said periodicity indicator signal generator means of accepting a reference signal and at the output of said periodicity indicator signal generator a means of connection to said video amplifier for incorporation of said periodicity indicator signal into said video signal as said video signal passes through said video amplifier, a means included within said periodicity indicator signal generator of selecting duration and timing of said periodicity indicator signal relative to said reference signal; a synchronization signal detector connected to said video amplifier capable of determining the presence of synchronization signals within said video signals as said video signal passes through said video amplifier, means of which said synchronization signal detector prevents incorporation of said periodicity indicator signal into said video signal during intervals when said synchronization signals are present in said video signal; and a means of providing electrical current to said video amplifier, said periodicity indicator signal generator and said synchronization signal detector.

4,162,513
TELEVISION SYSTEM SCHEDULER

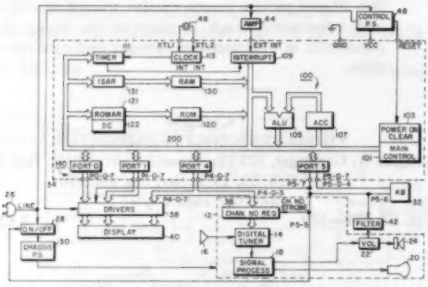
Billy W. Beyers, Jr., Greenfield, and Adam J. Suchko, Indianapolis, both of Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sep. 26, 1978, Ser. No. 945,042

Claims priority, application United Kingdom, Sep. 30, 1977, 40763/77

Int. Cl.[2] H04N *5/48*; H04B *1/26*

U.S. Cl. 358—191 **15 Claims**



1. In a television system, apparatus comprising:

digital tuner means for tuning said television system to various channels identified by respective channel numbers in a predetermined range of numbers in response to binary signals representing said channel numbers;

programmable means for at least temporarily storing binary signals representing information to be selected by a user;

keyboard means including a plurality of digit keys for normally generating binary signals representing said channel numbers in response to the operation of said digit keys by said user; and

control means responsive to the operation of at least one of said digit keys to generate binary signals representing channel numbers within said predetermined range of numbers for causing said digital tuner means to tune said television system to respective channels and responsive to the operation of at least one of said digit keys to generate binary signals representing a predetermined number not within said predetermined range of said numbers for enabling said programmable means to receive binary signals generated in response to the subsequent operation of said digit keys.

4,162,514
ARRANGEMENT FOR SEMICONDUCTOR POWER COMPONENTS

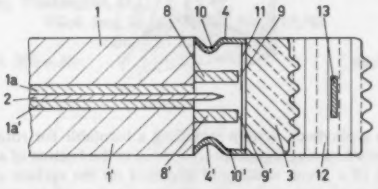
Patrick De Bruyne, Station Siggenthal, and Lutz Niemeyer, Oberrohrdorf, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Sep. 19, 1977, Ser. No. 834,263

Claims priority, application Switzerland, Oct. 27, 1976, 13521/76

Int. Cl.[2] H02H *7/20*

U.S. Cl. 361—2 **14 Claims**



1. An installation for semiconductor power components, said installation including at least one semiconductor power component placed between contact pieces and enclosed in a housing including an insulator having an inner wall surrounding the contact pieces and connected thereto by connecting pieces having an inner wall interior to said housing, wherein, in order to increase the explosion safety of said installation upon the formation of an arc, there is provided the improvement comprising:

current conductors laterally adjoining the contact pieces and annularly surrounding said contact pieces in the immediate vicinity of said semiconductor power component, said current conductors separated from the interior wall of the insulator only by narrow gaps, the width of said gaps dimensioned so that no looping of the arc into the gap occurs.

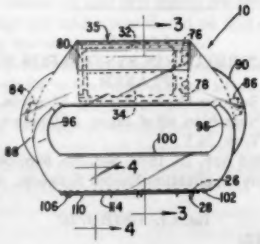
4,162,515
ELECTRICAL SHOCKING DEVICE WITH AUDIBLE AND VISIBLE SPARK DISPLAY

Gary A. Henderson, Arvada, and Guy H. Williams, Jr., Parker, both of Colo., assignors to American Home Products Corp., New York, N.Y.

Continuation-in-part of Ser. No. 752,575, Dec. 20, 1976, Pat. No. 4,092,695. This application Mar. 31, 1978, Ser. No. 892,351

Int. Cl.[2] F41B *15/04*

U.S. Cl. 361—232 **10 Claims**



1. A hand-held electrical shocking device which in the energized, operative condition produces a visible and audible external spark and is capable of delivering a jolting electrical shock comprising

a. a non-conductive hollow housing having a hand grip at a first housing portion;

b. first and second conductive plates connected to a second housing portion and being spaced apart from each other by a non-conductive member;

c. a low voltage power source positioned within said housing;

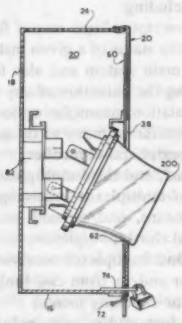
d. an electronic circuit means coupled to said power source and said first and second plates, said electronic circuit means being adapted to provide a series of short duration, high voltage, low current electrical impulses to said first and second plates.

4,162,516

METER BOX WITH DISCONNECT MEANS

Dale F. Becker, Seneca, S.C., assignor to Sangamo Weston, Inc., Norcross, Ga.

Filed Apr. 21, 1978, Ser. No. 898,360
Int. Cl.[2] H02B 9/00
U.S. Cl. 361—372 **13 Claims**



13. A combination enclosure meter and disconnect device comprising:

a socket and a meter having interengaging connecting members, said meter having a forward transparent front portion;

a housing and cover therefor enclosing said meter and said socket to prevent tampering therewith, said cover including an aperture aligned with said socket, wherein the forward transparent portion of said meter, when connected in said socket, extends through said aperture for allowing reading thereof;

said socket including pivotal means for allowing rotation of said meter from its normal position fully connected to said socket to a second position in which some of said terminals are disconnected from said socket.

4,162,517

TRIM ASSEMBLY FOR PANELBOARD

Ronald H. Reed, Versailles, Ky., assignor to Square D Company, Park Ridge, Ill.

Filed Oct. 17, 1977, Ser. No. 842,773
Int. Cl.[2] H02B 1/04
U.S. Cl. 361—358 **7 Claims**

1. A panelboard trim assembly comprising:

a cabinet having an open end, said cabinet also having a perimeter,

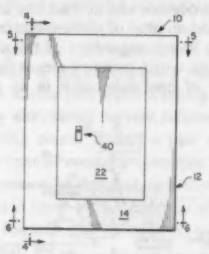
a cabinet cover having a perimeter overlapping said perimeter of said cabinet to cover said open end of said cabinet, said cover having an opening aligned with said cabinet open end providing access to said open end of said cabinet,

means on said cover for clamping said cover to said cabinet,

a door movably carried by said cover to close said cover opening in response to movement of said door to one position and uncover said cover opening in response to movement of said door to another position,

a hopper carried by said cabinet and covered by said cabinet cover, said hopper being accessible through said cover opening in response to the movement of said door to said other position,

a pair of spaced rabbets projecting from said cover toward



said hopper in surrounding relationship to the perimeter of said cover opening,

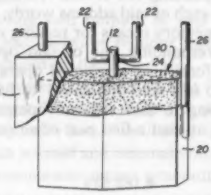
and a flange on said hopper projecting toward said cover in surrounding relationship to the perimeter of said cover opening and received intermediate said rabbets.

4,162,518

ANODE BODY FOR SOLID ELECTROLYTIC CAPACITOR

Horace E. Curlis, Jr., Anderson, S.C., assignor to Union Carbide Corporation, New York, N.Y.

Filed Aug. 15, 1977, Ser. No. 824,722
Int. Cl.[2] H01G 9/00
U.S. Cl. 361—433 **4 Claims**



1. A slab shaped anode body of pressed anodizeable metal powder having side surfaces which are relatively narrow with respect to the length of the anode body measured between the side surfaces and having a substantially symmetrical elongate cross-section perpendicular to its shorter central axis, the length of said cross-section being substantially greater than the width of said cross-section, said width varying from a maximum at its center to a minimum at the relatively narrow sides of the anode body.

4,162,519

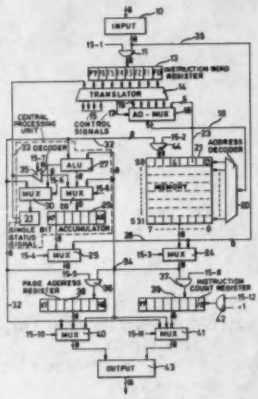
DATA PROCESSOR WITH ADDRESS ALLOCATION TO OPERATIONS

Lorenz Hanewinkel, Paderborn, Fed. Rep. of Germany, assignor to Nixdorf Computer AG, Paderborn, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 650,071, Jan. 19, 1976, abandoned. This application Oct. 25, 1977, Ser. No. 844,885
Claims priority, application Fed. Rep. of Germany, Jan. 20, 1975, 2502005
Int. Cl.[2] G06F 3/00, 9/00
U.S. Cl. 364—200 **11 Claims**

1. A microprocessor, comprising, in combination, input means for receiving a sequence of instruction words all having the same number of instruction word bits, at least a first selected one of said instruction words having a number of operation code bits equal in number to said number of instruction word bits and no address bits, at least a second selected one of

said instruction words having a number of operation code bits less than said number of instruction word bits and an address part having the remaining number of bits; translator means connected to said input means for furnishing a predetermined number of control signals for controlling various operations within the microprocessor and at least one address word having a predetermined number of address bits in response to each of said instruction words regardless of the number of address bits in an instruction word; memory means for storing a predetermined number of operands, each in an operand memory



location assigned thereto; addressing means interconnected between said translator means and said memory means for addressing a corresponding one of said operand memory locations in response to each of said address words; read-out means connected to said memory means for reading out the operand stored in said corresponding one of said operand memory locations, thereby furnishing a selected operand; and output means connected to said read-out means for furnishing output signals corresponding to said selected operand, said output signals constituting at least a first part of an output address.

4,162,520

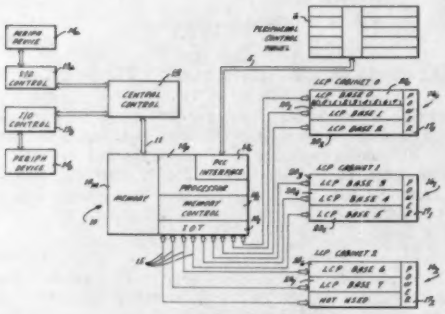
INTELLIGENT INPUT-OUTPUT INTERFACE CONTROL UNIT FOR INPUT-OUTPUT SUBSYSTEM

Darwen J. Cook, Alhambra, and Donald A. Millers, II, San Clemente, both of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Continuation-in-part of Ser. No. 728,458, Sep. 30, 1976, abandoned. This application Dec. 23, 1977, Ser. No. 864,152

Int. Cl.[2] **G06F** *3/00, 11/00*

U.S. Cl. 364—200 **13 Claims**



1. A peripheral controller-processor for storing, controlling and monitoring the transfer of data between a central processing unit of a main system and a selected peripheral terminal unit communicating with said main system, said peripheral controller-processor comprising:

(a1) first transmitting means for transmitting stored digital data to said peripheral terminal unit;

(a2) second transmitting means for transmitting stored digital data to the said main system;

(b1) first receiving means for receiving digital data from said main system for temporary storage within said peripheral controller-processor;

(b2) second receiving means for receiving digital data from said peripheral terminal unit for temporary storage within said peripheral controller-processor;

(c) error-checking means for accuracy checking of each transmission of data transmitted and for each transmission of data received, said error checking means including checking signals for longitudinal word parity, vertical parity, and block-check character parity, said error checking means including:

(c1) result descriptor logic means for developing signals reflecting the status of a given instruction task received from said main system and also for generating signals representing the detection of any error condition;

(d) digital translation means for optionally translating data from a data buffer memory to be acceptable to the main memory or peripheral-controller;

(e) a first, second, and third multiplexor;

(e1) said first multiplexor receiving data from said first receiver means, and/or said second receiver means and/or said third multiplexor;

(e2) said second multiplexor receiving data from said first multiplexor and/or from said longitudinal parity signal of said error-checking means;

(e1a) said first multiplexor including selection means responsive to control signals for selecting whether the data received will be accepted from the main system or from the peripheral unit;

(e2a) said second multiplexor including control means to select its input directly from said first multiplexor or from said longitudinal word parity checking signals;

(e3) said third multiplexor receiving data from a data buffer memory and/or from said longitudinal word parity checking means and/or from said digital data translator;

(f) a data buffer memory for receiving and storing digital data received from said second multiplexor, and for providing temporary data storage;

(f1) said buffer memory including:

(f1a) memory space for storing at least one full block of message data for later transmittal to said main system or to said peripheral unit;

(f1b) memory space for storing a descriptor-link identifier word generated from said main system, to identify each data transfer operation task initiated by said main system;

(f1c) memory space for storing an instruction word received from said main system;

(f1d) memory space for storing a result descriptor word generated by result-descriptor logic circuitry for later transfer to said main system;

(g) processor-logic means for receiving data transfer instruction words from said main system and executing said instructions without further interference to said main system, said processor-logic means including:

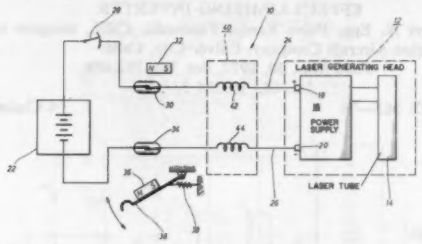
(g1) means for executing read, write and test operations independently of the processor of the main system, said logic means also executing error checking operations on digital data received by said peripheral controller-processor.

4,162,521

CONTROL CIRCUIT ARRANGEMENT FOR LASER AIMING SYSTEM HAVING MAGNETIC DECOUPLING MEANS

Wesley L. Snyder, 1103 Forest Home Dr., Houston, Tex. 77094

Filed Aug. 22, 1977, Ser. No. 826,562
Int. Cl.[2] F41G 1/34
U.S. Cl. 362—113 **9 Claims**



1. A control circuit arrangement for a laser aiming system for aiming a firearm comprising:

means for generating a coherent beam of light useful to assist in aiming a firearm, said means including a high voltage power supply having first and second terminals;

a source of electrical potential connected to said first and second terminals;

first and second magnetically responsive switches respectively disposed in series with each of said first and second terminals and said source; and,

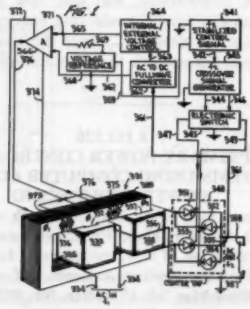
means for magnetically decoupling said high voltage power supply from said magnetically responsive switches, said means for magnetically decoupling being substantially resistanceless.

4,162,522

APPARATUS FOR FREQUENCY CONVERSION BY ELECTROMAGNETIC INDUCTION

Nathan A. Moerman, 7310 Maple Ave., Chevy Chase, Md. 20015

Division of Ser. No. 762,896, Jan. 26, 1977, Pat. No. 4,112,347, which is a division of Ser. No. 635,007, Nov. 25, 1975, Pat. No. 4,020,440. This application Nov. 9, 1977, Ser. No. 849,916
Int. Cl.[2] H02M 5/16
U.S. Cl. 363—171 **1 Claim**



1. In an electromagnetic induction means for the conversion of an input high frequency alternating current power source to an output low frequency alternating current power output,

an alternating current power transformer means having an input, an output and a bypass variable permeance closed magnetic path means and a first and a second permeance control section,

said output path means integral with said first control section and said input path means to form a first closed path,

said bypass means integral with said second control section and said input path means to form a second closed path,

an input winding means surrounding said input path means,

means connecting a high frequency alternating current power source across said input winding means,

a low frequency alternating current reference signal source,

an output winding means having a pair of end connector means and a central connecting means surrounding said output path means having induced therein a modulated envelope of said input high frequency alternating current input signal by said low frequency alternating current reference signal,

a fullwave controlled rectifier combination means connected to said pair of end connecting means to convert said modulated envelope into a low frequency alternating current power output determined by said low frequency reference signal,

a crossover signal generator means wherein the zero crossover point of said low frequency alternating current reference signal produces a crossover output signal,

means connecting said low frequency signal source to said crossover signal generator means,

an electronic switch means having a pair of alternately activated output signal means,

means connecting the output of said crossover signal generator means as the controlling inputs to said electronic switch means,

means connecting said outputs of said electronic switch means and said fullwave rectifier means to provide the phased commutation thereof,

an alternating current to direct current fullwave converter means having a first and a second output means,

a voltage comparator means including a voltage reference means and an internal and external voltage control means,

said voltage comparator means generating a voltage error output signal,

a complementary control amplifier means,

a feedback means connected between the output of said fullwave controlled rectifier combination means and said converter means,

said first output means of said converter means connected to said internal and external voltage control means,

said second output means of said converter means connected as a first input to said complementary control amplifier means,

said low frequency reference signal source connected to said voltage reference means,

the output of said voltage comparator means connected as a second input to said complementary control amplifier means,

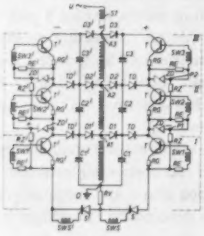
the complementary amplifier means energized by said error signal from said voltage comparator means for apportioning the control current between the said first and second permeance control sections to apportion the magnetic flux in the input path between the said output path and the said bypass path in response to the said error signal to stabilize and enable the control of said low frequency alternating current power output,

the apportioning of flux between the output and bypass paths enables said input high frequency power to be induced in said output winding in a modulated envelope defined by the low frequency reference signal.

4,162,523
STATIC CIRCUIT ARRANGEMENT FOR PRODUCTION OF 3-PHASE CURRENT OF VARIABLE FREQUENCY AND OUTPUT POWER

Werner Ansorge, Vogelbeerweg 3, 773 Villinger, Schwarzwald, Fed. Rep. of Germany

Filed Apr. 21, 1977, Ser. No. 789,641
Claims priority, application United Kingdom, Apr. 28, 1976, 17290/76
Int. Cl.² H02M *7/00*
U.S. Cl. 363—43 **23 Claims**

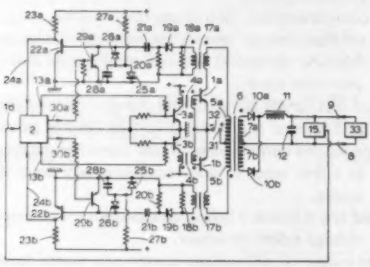


1. A static circuit arrangement for the production of three-phase currents, comprising a plurality of waveform generating stages arranged in a series cascade, at least a first one of said stages comprising three waveform generating circuits connected in parallel; a respective current source for each said stage; and control means operable to render each one of said three circuits conductive in turn and connect the conductive circuit in series with the remainder of the cascade.

4,162,524
DC-DC CONVERTER

Leonard E. Jansson, Banstead, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 19, 1977, Ser. No. 788,799
Claims priority, application United Kingdom, Apr. 21, 1976, 16106/76
Int. Cl.² H02M *3/335*
U.S. Cl. 363—56 **12 Claims**

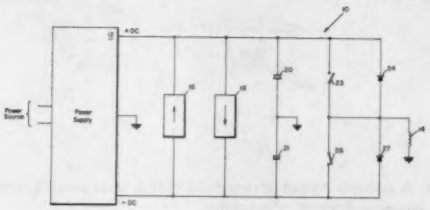


1. A dc - dc converter comprising a switching transistor, a switching signal source having an output coupled to a control electrode of said transistor, an inductance connected in series combination with the main current path of said transistor across a DC supply source, means for coupling the inductance to a pair of output terminals via a rectifier with a polarity such that, when a load is present across said output terminals and the switching transistor is made to conduct, the rectifier will be forward biassed, a current change sensing circuit having an input coupled to the main current path of said switching transistor for sensing if the increase in the current in said main current path occurring during a given part of said transistor conduction period reaches a given value, which part does not include the start of the corresponding conduction period, and means coupling an output of said sensing circuit to the input of a current control circuit connected in circuit for controlling the switching transistor main current to prevent said current from exceeding the transistor rating if said given value is reached.

4,162,525
POWER SYSTEM HAVING AN INDUCTIVE CHARGE EFFECT LIMITING INVERTER

Herbert N. Epp, Palos Verdes Peninsula, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 30, 1977, Ser. No. 782,659
Int. Cl.² H02M *3/335*
U.S. Cl. 363—71 **4 Claims**



1. A high efficiency power system having a power supply for providing pulse width modulated power to an inductive load from first and second power buses, each bus having a particular voltage, comprising:

first switch means coupling said power supply and said inductive load for providing pulse width modulated power having a first polarity to said load from said first power bus and for interrupting said power for preselected time periods;

first energy storage means coupled to said second power bus for storing energy from said inductive load having a second plurality during said periods of power interruption;

first energy transfer means coupled between said first and second power buses for converting said energy stored in said energy storage means from said second polarity to said first polarity and for transferring said energy to said first power bus, said first energy transfer means having a transformer having first and second terminals coupled alternately to opposite ones of said first and second power buses so as to periodically reverse the coupling of said transformer across said buses for converting said second polarity energy to said first polarity energy; and

first and second diodes coupled to said first and second terminals, respectively, and said first power bus, said diodes for alternately conducting energy from said first energy storage means whenever the absolute voltage of said second bus exceeds the absolute voltage of said first bus.

4,162,526
FAILSAFE PRIMARY POWER CONTROL APPARATUS FOR SYSTEMS USING COMPUTER CONTROLLED POWER SEQUENCING

Albert E. Gass; Harry W. Gottshall, both of Poughkeepsie; Manfred O. Schaber, Hyde Park, and Lawrence Trombino, Pleasant Valley, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 16, 1978, Ser. No. 887,090
Int. Cl.² G06F *11/00*
U.S. Cl. 364—200 **8 Claims**

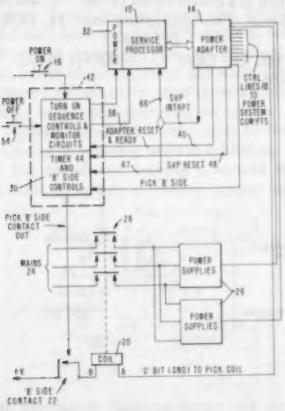
1. A failsafe primary power control apparatus for systems using computer controlled power sequencing comprising:

means for supplying fault signals from the power elements of the power system indicative of detected power faults;

means responsive to the fault signals from the power elements to provide an interrupt signal;

processor means responsive to said interrupt signal for supplying an encoded signal when the processor is operable;

decoder means responsive to said encoded signal to provide a decoded timer reset signal;



a timer having a preset time interval started in response to said interrupt signal and providing a power-off signal upon running a full time interval and responsive to said decoded timer reset signal for stopping the timer before running a full interval and resetting the timer to the begining of the preset time interval;

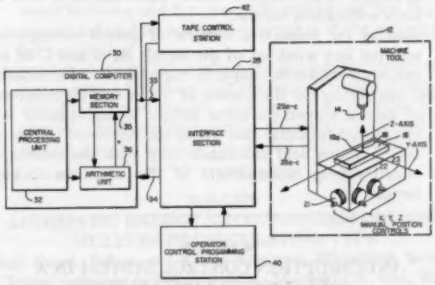
means responsive to said power-off signal for removing power from said power elements.

4,162,527

NUMERICALLY CONTROLLED MACHINE TOOL SYSTEM WITH PROGRAMMABLE TOOL OFFSET

James C. Kilbane, Belmont, and Samuel M. Hamill, III, Scituate, both of Mass., assignors to Hamill Company, Inc., Norwell, Mass.

Filed Jul. 29, 1977, Ser. No. 820,230
Int. Cl.[2] G06F *15/46*; G05B *19/24*
U.S. Cl. 364—474 **14 Claims**



1. A machine tool system comprising a cutting element and workpiece positioning table, and control means for controlling the position of said cutting element with respect to said positioning table, said control means including:

A. means for storing an ordered succession of data sequences, each sequence including:

i. identification data representative of the relative position of said sequence in said ordered succession,

ii. coordinate data representative of an associated spatial point measured with respect to said positioning table,

iii. path data representative of a selected path type for said cutting element to approach said associated spatial point,

iv. offset data representative of an offset path which is parallel to and offset from a direct path of the selected type which intersects said associated spatial point, said offset data characterizing a magnitude and direction for the offset of said offset path,

v. sequence type data representative of the type of said sequence, said sequence being a start/stop type when said sequence is the first of a contiguous group of sequences in said succession, said contiguous group being terminated by the sequence immediately preceding the next start/stop type sequence, and said sequence being an intermediate type when said sequence is one of the other sequences in said contiguous group,

wherein the associated spatial points of said group define a shape, said shape being a closed shape when the spatial points associated with the first and last sequences in said group are identical, and said shape being an open shape otherwise,

B. means for selecting one of said succession of sequences as a current sequence,

C. path determining means responsive to said selected sequence, said path determining means including means for determining a tool path to be followed by said cutting element for a current sequence, said tool path comprising a line segment extending from the current coordinates of said cutting element to a final point, wherein:

i. when said current sequence is a start/stop type, and

a. when the shape defined by said contiguous group is open, said final point is defined by the intersection of a next subsequent offset path and a straight line segment,

said next subsequent sequence offset path being uniformly separated from a direct path of the type specified by the path data of the next subsequent sequence, said separation being in accordance with the offset data of said next subsequent sequence, and

said direct path intersecting the spatial points associated with the current sequence and next subsequent sequence in said succession, and

said straight line segment being perpendicular to said direct path at the spatial point associated with the current sequence, and

b. when the shape defined by said contiguous group is closed,

said final point is defined by the intersection of a next subsequent sequence offset path and a last sequence offset path, said next subsequent sequence offset path being uniformly separated from a first direct path of the type specified by the path data of the next subsequent sequence, said separation being in accordance with the offset data of said next subsequent sequence, and

said first direct path intersecting the spatial points associated with the current and next subsequent sequences, and

said last sequence offset path being uniformly separated from a second direct path of the type specified by the path data of the last sequence in said contiguous group, said separation being in accordance with the offset data of said last sequence, and

said second direct path intersecting the spatial points associated with said last sequence and the sequence immediately preceding said last sequence, and

ii. when said current sequence and next subsequent sequence are intermediate types, and

said final point is defined by the intersection of a current sequence offset path and a next subsequent sequence offset path,

said current sequence offset path being uniformly separated from a first direct path of the type specified by said path data of said current sequence, said separation being in accordance with the offset data of said current sequence,

said first direct path intersecting the spatial points associated with the current sequence and next previous sequence, and

said next subsequent sequence offset path being uniformly separated from a second direct path of the type specified by said path data of said next subsequent sequence, said separation being in accordance with the offset data of said next subsequent sequence,

said second direct path intersecting the spatial points associated with the current sequence and next subsequent sequence, and

iii. when said current sequence is an intermediate type and the next subsequent sequence is a start/stop type, and

a. when the shape defined by said contiguous group of said current sequence is open:

said final point is defined by the intersection of a current sequence offset path and a straight line segment,

said current sequence offset path being uniformly separated from a direct path of the type specified by the path data of said current sequence, said separation being in accordance with the offset data of said current sequence,

said direct path intersecting the spatial points associated with the current sequence and said next previous sequence,

said straight line being perpendicular to said direct path at the spatial point associated with said current sequence, and

b. when the shape defined by said contiguous group of said current sequence is closed:

said final point is defined by the intersection of a current sequence offset path and a first intermediate sequence offset path,

said current sequence offset path being uniformly separated from a first direct path of the type specified by the path data of said current sequence with said separation being in accordance with the offset data of said current sequence,

said first direct path intersecting the spatial points associated with the current sequence and next previous sequence,

said first intermediate sequence offset path being uniformly separated from a second direct path of the type specified by the path data of the first intermediate sequence of the contiguous group of said current sequence with said separation being in accordance with the offset data of said first intermediate data,

said second direct path intersecting the spatial points associated with the current sequence and said first intermediate sequence,

D. drive means responsive to said path determining means for a current sequence to control the relative motion of said cutting element along said determined tool path.

4,162,528

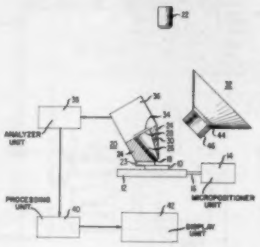
X-RAY-FLUORESCENCE MEASUREMENT OF THIN FILM THICKNESSES

Juan R. Maldonado, Berkeley Heights, and Dan Maydan, Short Hills, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 863,466, Dec. 22, 1977, abandoned, which is a continuation of Ser. No. 687,462, May 18, 1976, abandoned. This application Mar. 31, 1978, Ser. No. 892,105

Int. Cl.[2] G06F *15/20*; G01N *23/22*

U.S. Cl. 364—563 **10 Claims**



1. A method for simultaneously measuring in an x-ray-fluorescence system the thickness of two thin films made of A and B, respectively, deposited on top of each other on a substrate made of C, where A, B and C designate metals, said method comprising the steps of

calibrating said measuring system by

(A) irradiating with x-rays in said system known-thickness samples of an uncoated substrate of A, an uncoated substrate of B, an uncoated substrate of C, an uncoated layer of A, a layer of A on a substrate of C, a layer of A on a substrate of B, a layer of B on a substrate of C, and a layer of A on a layer of B on a substrate of C,

(B) and measuring the number of counts in specified line windows of each of said uncoated samples to provide reference counts of the fluorescence excited therein and also measuring the number of counts in specified line windows of said coated samples to provide reference counts of the fluorescence excited therein including reference counts representative of the per-unit attenuation of the coating layers on fluorescence excited in the underlying layer or substrate,

irradiating in said system an unknown-thickness A-on-B-on-C sample with x-rays to excite fluorescence in said unknown-thickness sample,

measuring the respective number of counts in respective selected line windows of the metals A, B and C of said unknown-thickness sample in response to said irradiation,

and calculating the thicknesses of the A and B constituents of said unknown-thickness sample in accordance with interaction formulae that relate the reference counts obtained during said calibration step with the counts obtained during measurement of the unknown-thickness sample.

4,162,529

INTERRUPTION CONTROL SYSTEM IN A MULTIPROCESSING SYSTEM

Seigo Suzuki, Yokohama, and Seiji Eguchi, Kawasaki, both of Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Japan

Continuation-in-part of Ser. No. 747,191, Dec. 3, 1976, abandoned. This application Jan. 5, 1978, Ser. No. 867,306

Claims priority, application Japan, Dec. 4, 1975, 50/144629

Int. Cl.[2] G06F *9/18, 13/00*

U.S. Cl. 364—200 **2 Claims**

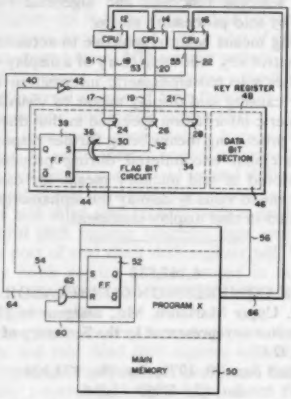
1. An entry requirement control system for a data processing system comprising:

a plurality of central processing units each including means for generating an entry requirement to read a program, means for executing the program and means for generating an END signal when execution of the program is completed;

a common main memory connected to each of said processing units and including a program to be accessed by the processing units;

a key register connected between said central processing units and said memory, said key register including a first flag bit circuit having a first set terminal, a first reset terminal, a first output terminal and a first flag bit wherein, upon receipt of an entry requirement from one of the processing units, said first flag bit circuit is set, a first output signal is generated and access to the program by the remaining processing units is inhibited;

a second flag bit circuit, having a second set terminal, a second reset terminal, a second output terminal and a



second flag bit, for receiving said first output signal from said first flag bit circuit to generate a second output signal and allowing access to the program by said one processing unit, wherein said second flag bit circuit is set in response to said first output signal from said first flag bit circuit to inhibit access to said program by said remaining processing units, and wherein said second output signal is applied to said first reset terminal of said first flag bit circuit;

first reset means for conducting said second output signal to said first reset terminal of the first flag bit circuit to reset the first flag bit circuit, said first reset means being provided between said first reset terminal of said first flag bit circuit and said second output terminal of the second flag bit circuit; and

second reset means for resetting the second flag bit circuit in response to a condition that said second output signal and said END signal coexist, said second reset means being provided between said central processing units and said second reset terminal of the second flag bit circuit.

4,162,530

AUTOMATIC ENERGY SUPPLY SYSTEMS OF THE MULTI-RATE CALCULATING TYPE

Shoji Kusui, Tokyo, and Kazuo Kitagawa, Hiroshima, both of Japan, assignors to Nihon Vending Machine Co., Ltd., Hiroshima, Japan

Filed Dec. 16, 1977, Ser. No. 861,164

Claims priority, application Japan, Dec. 21, 1976, 51-152942

Int. Cl.[2] G01R *11/57, 11/24*

U.S. Cl. 364—464 **10 Claims**

1. An automatic energy supply system of the multi-rate calculating type for controlling an amount of energy supplied to a customer comprising:

a pulse generating integrating means coupled to an energy source for integrating said amount of energy supplied to a customer and for generating an electric signal whenever a predetermined unit of said energy is supplied;

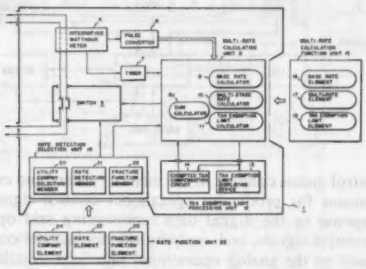
a pulse converter means for converting said electric signal into at least one pulse signal;

a timer means for generating a time signal corresponding to a predetermined rate calculating interval;

a switching means coupled to said energy source for switching said energy supplied to the customer on and off;

a multi-rate calculation function unit comprising a plurality of element means for providing energy rate parameters and tax parameters;

a rate function unit comprising a rate element means for providing money parameters which represent an amount of money corresponding to a predetermined amount of purchased energy;



a rate detection selection unit comprising a rate detection member means responsive to said money parameter provided by said rate element means, said rate detection member means being a means for producing a rate signal corresponding to said predetermined amount of purchased energy; and

a multi-rate calculating unit means coupled to said switching means and responsive to said time signal, to said at least one pulse signal, to said rate signal and to said energy rate and said tax rate parameters provided by said multi-rate calculation function unit, said multi-rate calculating unit means being a means for providing a sum signal to said switching means which causes said switching means to switch off when said amount of energy supplied to the customer corresponds to said predetermined amount of purchased energy and to said parameters regarding energy rates and tax.

4,162,531

METHOD AND APPARATUS FOR PROGRAMMABLE AND REMOTE NUMERIC CONTROL AND CALIBRATION OF ELECTRONIC INSTRUMENTATION

France Rode, Los Altos; Peter Lindes, Palo Alto; Ralph F. Eschenbach, Los Altos, and Zvonko A. Fazarinc, Portola Valley, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 759,308, Jan. 14, 1977, Pat. No. 4,099,240.

This application May 22, 1978, Ser. No. 908,032

Int. Cl.[2] G06F *3/14;* **H01J** *29/00*

U.S. Cl. 364—571 **25 Claims**

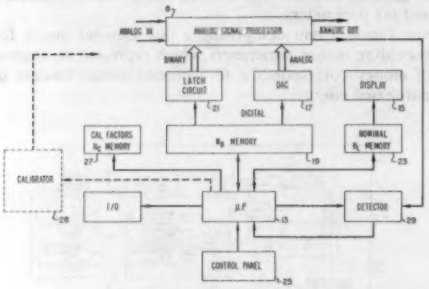
1. Electronic signal processing apparatus for processing analog signals comprising:

memory means for storing digital data representing control settings of analog operational functions performed by the apparatus, and for storing digital data representing calibration factors for calibrating said analog operational functions;

computing means coupled to the memory means for computing the numerical value of digital data representing operational control signals for controlling said analog opera-

tional functions as a mathematical function of corresponding control settings and calibration factors, and for storing the digital data representing said operational control signals in the memory means; and

a control panel coupled to the memory and computing means having first input means mounted thereon manually operable for causing the computing means to compute incremented and decremented values of the digital data representing the control settings of the analog operational functions performed by the apparatus;



control means coupled to the memory means and computing means for producing operational control signals in response to the digital data representing said operational control signals, and applying the operational control signals to the analog operational functions associated with each of the control settings and calibration factors for processing the analog signals; and

the control panel further including display means for displaying the incremented or decremented value of the control settings to the user.

4,162,532

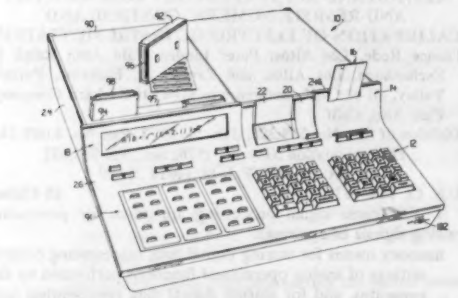
PROGRAMMABLE CALCULATOR INCLUDING DATA FORMAT DISPLAY CONTROL MEANS

Emil E. Olander, Jr., Fort Collins; Rex L. James, Loveland; Ivar W. Larson, Loveland; Wayne F. Covington, Loveland; Jack M. Walden, Loveland; Robert E. Watson, Loveland; Francis J. Yockey, Loveland; Fred Wenninger, Jr., Loveland, and Homer C. Russell, Berthoud, all of Colo., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Division of Ser. No. 510,921, Sep. 30, 1974, Pat. No. 4,028,538, which is a division of Ser. No. 212,581, Dec. 27, 1971, Pat. No. 3,839,630. This application Jun. 1, 1977, Ser. No. 802,222

Int. Cl.[2] G06K *15/18;* G06F *3/14*

U.S. Cl. 364—710 **5 Claims**



1. An electronic calculator comprising:

keyboard input means including a plurality of alphabetic and numeric keys for entering at least one line of one or more alphameric statements into the calculator, a display control key for entering a display statement into the calculator, and an execute control key for initiating execution of a line of alphameric statements entered into the calculator;

memory means, coupled to said keyboard input means, for storing each line of alphameric statements as it is being entered into the calculator from said keyboard input means and for storing a program comprising a plurality of lines of alphameric statements entered into the calculator;

said memory means including a plurality of data storage registers for storing data entered into the calculator;

processing means, coupled to said keyboard input means and memory means, for selectively processing a single line of alphameric statements entered into the calculator from said keyboard input means and a program previously stored in said memory means to perform selected functions and to compute the results of selected algebraic expressions; and

display means, coupled to said processing means, for providing a visual indication of each line of one or more alphameric statements entered into the calculator and of the results of selected functions and algebraic expressions processed by said processing means;

said processing means being responsive to actuation of said execute control key following entry of a display statement that specifies selected alphameric information to be displayed for causing said display means to visually display the alphameric information specified in that display statement, said processing means being further responsive to a display statement encountered during processing of a program stored in said memory means for causing said display means to visually display the alphameric information specified in that display statement.

4,162,533

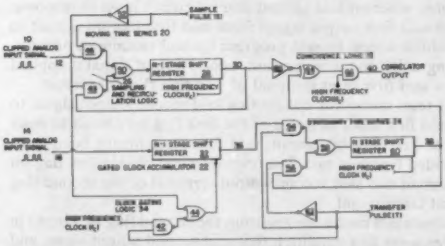
TIME COMPRESSION CORRELATOR

David P. Ricci, Upper Marlboro, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 30, 1978, Ser. No. 873,324

Int. Cl.[2] G06F *15/34*

U.S. Cl. 364—728 **6 Claims**



6. A correlator for the comparison of first and second clipped analog signals as a function of the time delay between them for use with an external source of timing pulses including high frequency clock pulses C having a frequency fc, a waveform period of 1/fc, and a pulse width of 1/fc; sample pulses S having a waveform period of N/fc, and a pulse width of 1/fc, and transfer pulses having waveform period of N(N×1/fc) and a pulse width of N/fc comprising:

a first shift register having N−1 stages, a clock input coupled to said external source of high frequency clock pulses, a data input port and a data output port;

sampling and recirculation logic coupled to said external source of sample pulses, gating said first clipped analog signal into said data input port of said first shift register, and recirculating data from said output port of said first shift register back to said input port of said first shift register, whereby data at said output port of said first shift register is gated back to said input port of said first shift

register only when the complement of a sample pulse is present and whereby new data from said first clipped analog signal can appear at said data input port of said first shift register only in the presence of a sample pulse and whereby once said first shift register is filled with data, each succeeding data sample of said first clipped analog signal replaces the oldest of such data samples stored and whereby a high frequency N-bit replica of the accumulated data within said register is presented at said output of said first shift register during each sample period;

a second shift register having N−1 stages, a clock input, a data input port, and a data output port coupled to said second clipped analog signal;

clock gating logic coupled to said external source of transfer pulses, sample pulses, and high frequency clock pulses, having an output coupled to said clock input of said second shift register whereby data is shifted in said second shift register on transitions of the high frequency clock in the presence of a transfer pulse or on transitions of the sample pulse when not in the presence of a transfer pulse and whereby an N-bit replica of data accumulated in said register is produced at said output port of said second shift register during every Nth sample period;

a third shift register having N stages, a clock input coupled to said external source of high frequency clock pulses, a data input port and a data output port;

stationary time series recirculation logic coupled and responsive to said external source of transfer pulses and gating said output port of said second shift register to said input port of said third shift register and gating said output port of said third shift register back to said input port of said third shift register whereby data appearing at said output port of said third shift register will be a high frequency N-bit replica of data stored in said third shift register and transferred from said output of said second shift register; and

coincidence logic coupled to said outputs of said first shift register and said third shift register whereby the data at said respective outputs are compared bit by bit and whereby a correlator output is generated that is proportional to the degree of coincidence between said first and second clipped analog signals.

4,162,534

PARALLEL ALIGNMENT NETWORK FOR D-ORDERED VECTOR ELEMENTS

George H. Barnes, Wayne, Pa., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jul. 29, 1977, Ser. No. 820,234
Int. Cl.[2] G06F *7/00*
U.S. Cl. 364—900 **5 Claims**

1. A parallel data access alignment network for aligning data between N input ports and N output ports wherein N is an integer greater than one, said data comprising d-ordered vector data elements spaced d modulo N input ports apart, said network comprising:

a plurality of $\log_2 N$ rounded up to the nearest integer of ordered levels serially connected between said N input and N output ports, each said ordered level including;

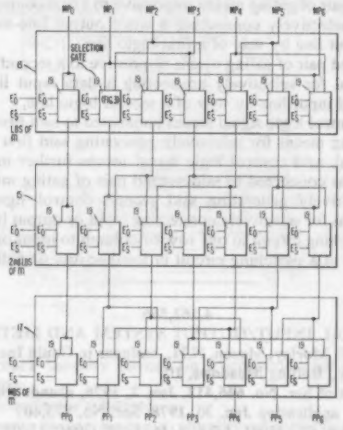
a plurality of N input channels for receiving in parallel data from the preceding ordered level in said plurality of ordered levels with said plurality of N input channels of the lowest ordered level receiving in parallel data from said N input ports,

a plurality of N output channels for sending in parallel data to the succeeding level in said plurality of ordered levels with said plurality of N output channels of the highest ordered level sending in parallel data to said N output ports,

means for providing direct data flow between one input channel in said N input channels and one output channel to said N output channels, and

means responsive to a transposition control signal for providing selectively direct data flow and transposed data flow between all other channels in said N input and N output channels, said transposed data flow provided being equal in number of channels transposed to k raised to the power 2 raised to the power (L-1) wherein k is relatively prime to N and is a primitive root of N and L is the order of the level in said plurality of ordered levels; and

transposition selection means for selecting levels in said plurality of ordered levels for transposed data flow, said transposition selection means providing said transposition control signal therefor generated from the relationship



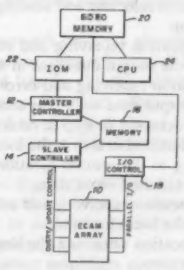
$d = k^m$ modulo N wherein di is said d-ordered vector data element input port spacing, k is said prime relative to N, N is said integer greater than one, and m is said transposition control signal expressed in binary form with said least significant bit of m provided to said lowest ordered level in said plurality of ordered levels, said increasingly significant bits of m provided individually and respectively to said increasing order of levels in said plurality thereof and said most significant bit of m provided to said highest ordered level in said plurality of ordered levels.

4,162,535

TRIANGULAR HIGH SPEED I/O SYSTEM FOR CONTENT ADDRESSABLE MEMORIES

George A. Anderson, Minneapolis, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Aug. 12, 1977, Ser. No. 824,012
Int. Cl.[2] G06F *13/00*; H04Q *3/52*
U.S. Cl. 364—900 **8 Claims**



1. A switching matrix for simultaneously interconnecting a plurality of input/output communication lines wherein said

matrix is comprised of a plurality of logical switching circuits arranged in rows and columns, each of said circuits comprising

a pair of data lines, one of which is an output line and the other of which is an input line, each of said lines passing therethrough and through each corresponding switching circuit in a given column,

a pair of word lines, one of which is an output line and the other of which is an input line, each of said lines passing therethrough and through each corresponding switching circuit in a given column,

a pair of logic lines passing through each circuit and through corresponding switching circuits of each row,

a first pair of gating means responsive to a first control signal for selectively connecting a word output line to a data output line by way of a first logic line,

a second pair of gating means responsive to a second control signal for selectively connecting a data input line to a word input line by way of a second logic line,

and control logic signal means connected to said first pair of gating means for selectively generating said first control signal, said control logic signal means further including means connected to said second pair of gating means for selectively generating said second control signal, and means for selectively connecting input or output lines of a switching circuit in one row or column to input or output lines of a switching circuit in another row or column.

4,162,536

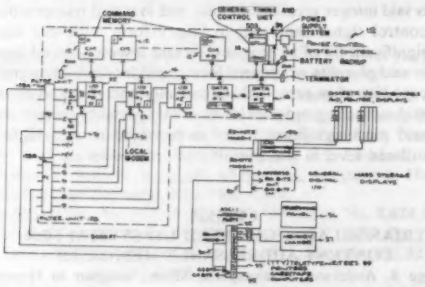
DIGITAL INPUT/OUTPUT SYSTEM AND METHOD

Richard E. Morley, Mason, N.H., assignor to Gould Inc., Modicon Div., Rolling Meadows, Ill.

Division of Ser. No. 646,412, Jan. 2, 1976, abandoned. This application Jan. 30, 1978, Ser. No. 873,407

Int. Cl.[2] H04L *1/14, 1/16, 1/18;* **G08C** *25/02*

U.S. Cl. 364—900 **59 Claims**



1. A method of sending selected output data from a local location to a remote location and sending selected input data from the remote location to the local location, comprising the steps of:

(1) the local location selecting and sending output data to the remote location;

(2) the remote location receiving and echoing back to the local location the output data sent in step 1;

(3) the local location receiving and error-checking the echoed selected output data with that sent in step 1;

(4) if an error is detected in step 3, returning to step 1;

(5) if no error is detected in step 3, the local location generating and sending to the remote location a first signal indicating desired selected input data;

(6) the remote location receiving and echoing the received first signal to the local location;

(7) the remote location obtaining the desired selected input data;

(8) the local location receiving the echoed first signal and error-checking it with the first signal sent in step 5;

(9) if an error is detected in step 8, returning to step 5;

(10) if no error is detected in step 8, assuming at the local location that a successful transfer of output data from the local location to the remote location has occurred;

(11) the local location generating and sending a second signal to the remote location, the second signal requesting transferral of the input data obtained in step 7;

(12) the remote location receiving the second signal and sending to the local location the desired selected input data obtained in step 7;

(13) the local location receiving and storing the requested input data;

(14) the local location generating and sending a third signal requesting the transferral of the same input data requested in step 11 to the remote location;

(15) the remote location receiving the third signal and echoing back the desired selected input data to the local location;

(16) the local location receiving and storing the desired selected input data sent in step 15 and error-checking this data with that received in step 13;

(17) if an error is detected in step 16, the local location substituting the data received in step 16 for that received in step 13 and returning to step 14; and

(18) if no error is detected in step 16, the local location assuming a successful transfer of input data has occurred from the remote location to the local location and returning to step 1.

4,162,537

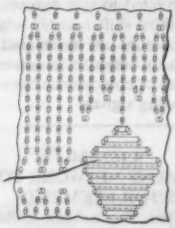
MAGNETIC BUBBLE MEMORY

Andrew H. Bobeck, Chatham, N.J., assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Jun. 12, 1978, Ser. No. 914,959

Int. Cl.[2] G11C *19/08*

U.S. Cl. 365—19 **8 Claims**



4. A propogate arrangement for moving magnetic bubbles along a path in a layer of magnetic material in which magnetic bubbles can be moved, said arrangement comprising first and second layers of electrically conducting material adjacent a surface of said layer of magnetic material, said first and second layers being separated by a layer of electrically insulating material, said first and second layers bearing first and second patterns of apertures respectively, said first and second patterns being offset with respect to one another for defining a path for bubbles in said layer of magnetic material.

4,162,538

THIN FILM PROGRAMMABLE READ-ONLY MEMORY HAVING TRANSPOSABLE INPUT AND OUTPUT LINES

David D. Thornburg, Los Altos, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 27, 1977, Ser. No. 819,310

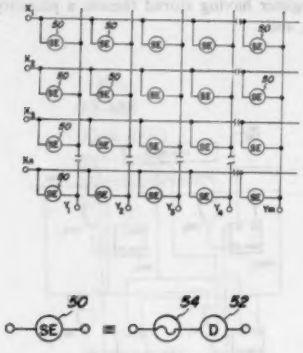
Int. Cl.[2] G11C *17/00, 11/34*

U.S. Cl. 365—96 **14 Claims**

1. A Read only memory comprising:

a matrix of first and second sets of conductors the crosspoints of which are connected by non-crystalline semiconductor switches in series with a fuse, each of said switching devices having a symmetrical voltage-current (V-I)

characteristic regardless of polarity state and comprises in either polarity state a non-linear high resistance state region and a negative differential low resistance state region, selected ones of said fuses being opened by driving their corresponding switches into said negative differential low resistance state region to provide a rapid rise of



current through said fuse whereby a plurality of data words are stored in said memory, and

means for applying a signal of a predetermined magnitude to the input terminal of a preselected conductor of either said first or second set of conductors whereby a signal corresponding to a predetermined data word is provided at the output terminals of the other set of conductors.

4,162,539

READ-OUT CIRCUIT FOR DIGITAL STORAGE ELEMENTS

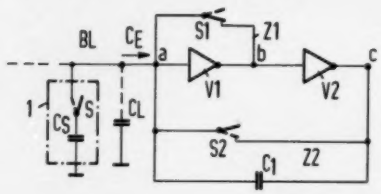
Ernst Hebenstreit, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 3, 1978, Ser. No. 921,496

Claims priority, application Fed. Rep. of Germany, Jul. 28, 1977, 2734137

Int. Cl.[2] G11C *11/24*

U.S. Cl. 365—149 **6 Claims**



1. A read-out circuit for digital storage elements wherein a bit line is connected to a storage capacitor is connected to the input of a first inverting amplifier stage which has its output connected to the input of a second inverting amplifier stage, and wherein the first amplifier stage can be bridged with a first switch, and wherein the output of the second amplifier stage can be connected to the input of the first amplifier stage by way of a second switch, characterized in that the input (a) of the first amplifier stage (V1) and the output (c) of the second amplifier stage (V2) are connected to one another through a capacitor (C1).

4,162,540

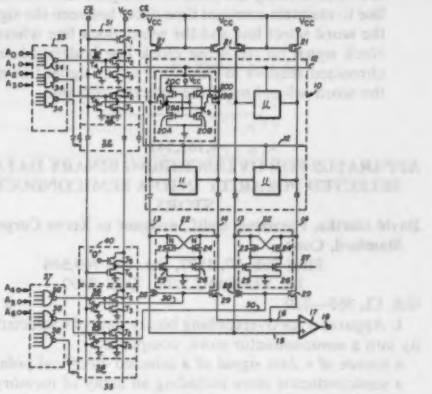
CLOCKED MEMORY WITH DELAY ESTABLISHER BY DRIVE TRANSISTOR DESIGN

Hisashige Ando, Santa Clara, Calif., assignor to Fujitsu Limited, Japan

Filed Mar. 20, 1978, Ser. No. 887,954

Int. Cl.[2] G11C *7/00, 7/06*

U.S. Cl. 365—194 **14 Claims**



1. A clock memory formed on a semiconductor substrate comprising:

a semiconductor substrate;

a memory matrix having a plurality of memory cells arranged in rows and columns on the semiconductor substrate;

a plurality of parallel word select lines in said memory matrix on the substrate with each of said word select lines connected to the memory cells in a common row;

a plurality of parallel bit lines in said memory matrix on the substrate, said bit lines crossing said word select lines and each bit line connected to said memory cells in a common column;

a row drive network having a plurality of row drive circuits connected to said word select lines for driving said word select lines, said row drive circuits each being (operated by) connected to a clock signal source with the output state of said row drive circuits being responsive to said clock signal and including a drive transistor of a predetermined channel length and channel width;

a row address decoder connected to the row drive network for receiving address signals and generating control signals to said row drive circuits pursuant to the address signals;

a plurality of column select lines on the substrate with each column select line being coupled to bit lines of a common column;

a column drive network having a plurality of column drive circuits with each column drive circuit being connected to a column select line for driving said bit lines coupled to said column select line, said column drive circuits each being connected to said clock signal source with the output state of said column drive circuits being responsive to said clock signal;

a column address decoder connected to the column drive network for receiving address signals and generating control signals to said column drive circuits pursuant to the address signals;

a plurality of presense amplifiers connected to said bit lines for detecting signals from selected memory cell in the selected column, each of said presense amplifiers having a latch and gate transistor;

a sense clock line on the substrate and parallel to said word

select lines, said sense clock being connected to each of said presense amplifiers; and

a presense drive circuit connected to said sense clock line for generating a sense clock signal over the sense clock line, the presense drive circuit being connected to said clock signal source and including a transistor formed in the substrate with controlled (charging) driving current capability dependent on the capacitive load of the sense clock line so as to delay the sense clock signal on the sense clock line to maintain constant time delay between the signals on the word select line and the sense clock line whereby the clock signal on the sense clock line is delayed and synchronized relative to the word select signal traveling on the word select line of the selected column.

4,162,541

APPARATUS FOR OVERSCRIBING BINARY DATA OF A SELECTED POLARITY INTO A SEMICONDUCTOR STORE

David Hartke, Pasadena, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Feb. 17, 1977, Ser. No. 769,596

Int. Cl.[2] G11C *5/02, 7/00, 8/00*

U.S. Cl. 365—230 **2 Claims**

1. Apparatus for overscribing binary data of a selected polarity into a semiconductor store, comprising:

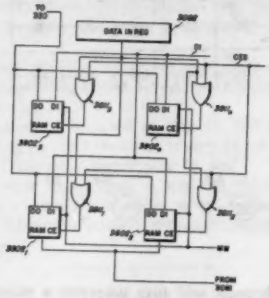
a source of a data signal of a selected electrical polarity;

a semiconductor store including an array of memory chips each enabled by a corresponding chip enable signal, each memory chip including a read/write terminal for selecting the direction of data transfer thereby and a data-in terminal connected to said source for receiving said data signal of said selected polarity;

addressing means including signal generating means for providing a write signal to said read/write terminals in lagging relationship relative to said chip enable signals for selecting storage locations for said data signal within said memory chips for write-in of the data signal at those selected locations;

means for generating a common logic signal;

a data register having stored therein a plurality of binary signals; and



a plurality of gates each connected to provide said chip enable signals to selected ones of said memory chips in response to receipt of one of said binary signals from said data register and said logic signal for enabling said memory chips to selectively store said data signal of said selected electrical polarity.

DESIGN PATENTS

GRANTED JUL. 24, 1979

ERRATA

For CLASS	See PATENT NO.
D14–070	252,425
D21–052	252,473
D48–002	252,475

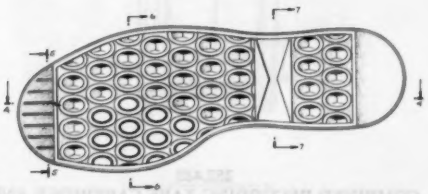
252,416
CANDY
Roy K. Wills, Jr., Oxford, Ohio, assignor to International Leisure Activities, Inc.
Filed Oct. 7, 1977, Ser. No. 840,505
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—17

252,417
CANDY
Roy K. Wills, Jr., Oxford, Ohio, assignor to International Leisure Activities, Inc
Filed Oct. 7, 1977, Ser. No. 840,506
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—17

252,418
CANDY
Roy K. Wills, Jr., Oxford, Ohio, assignor to International Leisure Activities, Inc.
Filed Oct. 7, 1977, Ser. No. 840,507
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—15

252,419
CANDY
Roy K. Wills, Jr., Oxford, and Austin L. Hayward, Springfield, both of Ohio, assignors to International Leisure Activities, Inc.
Filed Oct. 11, 1977, Ser. No. 841,326
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—17

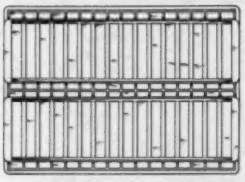
252,420
SOLE FOR A SHOE
Paul E. Bowers, Terryville, Conn., and Dennis P. Dolinsky, Cincinnati, Ohio, assignors to Uniroyal, Inc.
Filed Jul. 27, 1977, Ser. No. 819,513
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



252,421
PLATFORM SOLE FOR SHOES
Wayne A. Meeter, 1128 E. 170th St., South Holland, Ill. 60473
Filed Oct. 4, 1977, Ser. No. 839,787
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—322

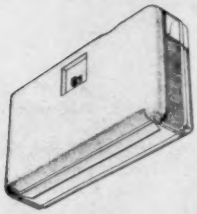
252,422
HOLDER FOR GOLF BALL MARKERS
Eugene Gillenwater, 1745 Carson Ave., Dorval, Quebec, Canada
Filed Aug. 9, 1977, Ser. No. 823,206
Term of patent 14 years
Int. Cl. D2—*07*; D19—*65*
U.S. Cl. D2—400

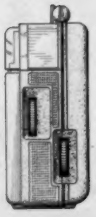
252,423
COMBINED RECORDING TAPE CARTRIDGE AND CASSETTE TRAY
Leslie Bokor, New York, N.Y., assignor to Le-Bo Products Company, Inc., Maspeth, N.Y.
Filed Jul. 28, 1977, Ser. No. 820,017
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35



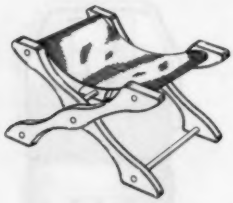
252,424
RECORDING TAPE CARTRIDGE TRAY
Leslie Bokor, New York, N.Y., assignor to Le-Bo Products Company, Inc., Maspeth, N.Y.
Filed Jul. 28, 1977, Ser. No. 820,018
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—35

252,425
PORTABLE RADIO RECEIVER
Masanori Hamada, Yao; Kunio Hoshino, Kadoma, and Kikuo Ohta, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan
Filed Nov. 10, 1976, Ser. No. 740,590
Claims priority, application Japan, May 11, 1976, 51-17522
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D14—70

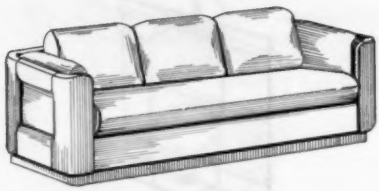




252,426
FOOTSTOOL
Don A. Brelsford, Box 1172, Telluride, Colo. 81435
Filed Sep. 14, 1977, Ser. No. 833,228
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—34

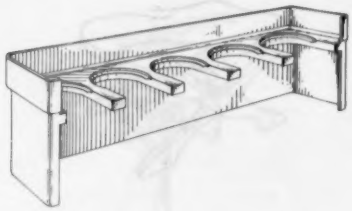


252,427
SEAT
Lester Beall, High Point, N.C., assignor to Trend Line Furniture Corporation, Hickory, N.C.
Filed Sep. 1, 1977, Ser. No. 829,994
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—63

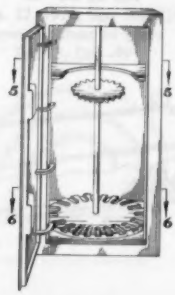


252,428
CHAIR
Don A. Brelsford, Box 1172, Telluride, Colo. 81435
Filed Sep. 14, 1977, Ser. No. 833,400
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—68

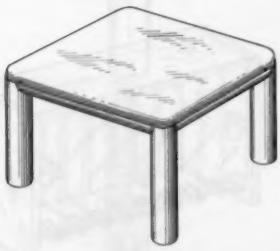
252,429
RACK FOR SPICE CONTAINERS
Andre Morin, 59 Place Mansfield, Dollard des Ormeaux, Quebec, Canada
Filed Apr. 20, 1978, Ser. No. 898,506
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—125



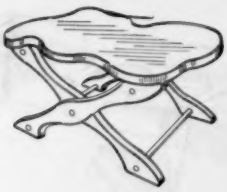
252,430
GUN CABINET
Ervin C. Oakley; George R. Bell, and William E. Poole, all of Winston Salem, N.C., assignors to ECO Industries, Inc.
Filed May 20, 1977, Ser. No. 798,912
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—167



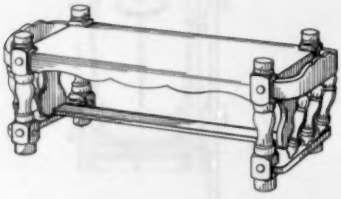
252,431
TABLE
Murray C. Pfister, San Francisco, Calif., assignor to Knoll International, Inc., Greenwich, Conn.
Filed Apr. 6, 1977, Ser. No. 785,088
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



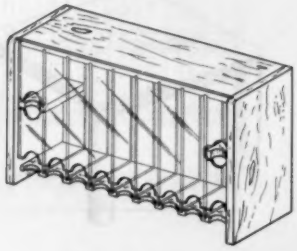
252,432
COFFEE TABLE
Don A. Brelsford, Box 1172, Telluride, Colo. 81435
Filed Sep. 14, 1977, Ser. No. 833,383
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—177



252,433
TABLE
Lester Beall, Jr., High Point, N.C., assignor to Trend Line Furniture Corporation, Hickory, N.C.
Filed Sep. 1, 1977, Ser. No. 831,637
Term of patent 14 years
Int. Cl. D6—*03*
U.S. Cl. D6—179

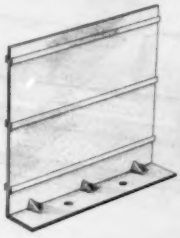


252,434
COMBINED DISPENSING AND DISPLAY CASE
Douglas Wright, Rte. 3, Box 363C, Greeneville, Tenn. 37743
Filed May 26, 1978, Ser. No. 909,814
Term of patent 14 years
Int. Cl. D20—*02;* D6—*04*
U.S. Cl. D6—189

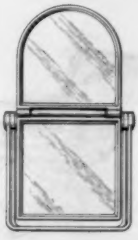


252,435
MULTI-COMPARTMENTED STORAGE RACK FOR SUNDRIES
Howard Sussman, c/o Crackerbarrel Marketing Inc., East Shore Rd., Huntington, N.Y. 11743
Filed May 16, 1977, Ser. No. 797,586
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—189

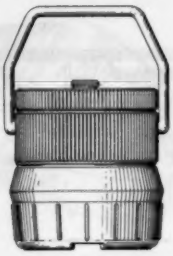
252,436
SIDE SUPPORT PANEL FOR PULL-OUT DRAWER UNITS
Clayton A. Elliott, 1931 Arbor La., Union, N.J. 07083
Division of Ser. No. 740,773, Nov. 11, 1976. This application Jun. 19, 1978, Ser. No. 916,709
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191



252,437
FOLDABLE MIRROR
Elihu Cohen, New York, N.Y., assignor to Trina, Inc., Fall River, Mass.
Filed Jul. 18, 1977, Ser. No. 817,025
Term of patent 14 years
Int. Cl. D6—*07*
U.S. Cl. D6—237

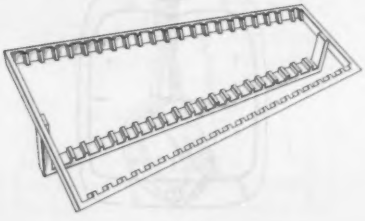


252,438
PICNIC JUG OR SIMILAR ARTICLE
John P. Cannon, Overland Park, Kans., assignor to Plattner Industries, Inc., Ottawa, Kans.
Filed Apr. 22, 1977, Ser. No. 790,068
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—77



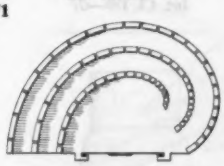
252,439
PAIL HANGER
James A. Smith, 9401 Bennie La., Ooltewah, Tenn. 37363
Filed Sep. 14, 1977, Ser. No. 833,381
Term of patent 14 years
Int. Cl. D7—*05*; D6—*06*
U.S. Cl. D7—187

252,440
COOKING POT TOP AND LID ORGANIZER
William P. Hamilton, 27800 Emery Rd., Cleveland, Ohio 44128
Filed Oct. 13, 1977, Ser. No. 841,877
Term of patent 14 years
Int. Cl. D7—*05*; D6—*04*
U.S. Cl. D7—188



252,441
PEDESTAL TYPE GARBAGE CAN HOLDER
Johnny G. Allen, 603 Cedar Ave., Albany, Ga. 31701
Division of Ser. No. 759,293, Jan. 13, 1977, Pat. No. Des. 248,364. This application Feb. 14, 1978, Ser. No. 877,781
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—189

252,442
O-RING FIXTURE
A. Peter Draffone, Lombard, Ill., assignor to B. W. Darrah, Inc., Carol Stream, Ill.
Filed Sep. 22, 1976, Ser. No. 725,651
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—71

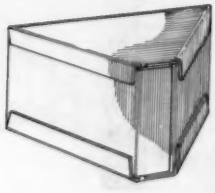


252,443
SUN UMBRELLA HOLDER
Joseph P. De Giorgis, 9040 El Cajon Way, #3, Sacramento, Calif. 95826
Filed Apr. 26, 1976, Ser. No. 679,997
Term of patent 14 years
Int. Cl. D8—*99*
U.S. Cl. D8—373

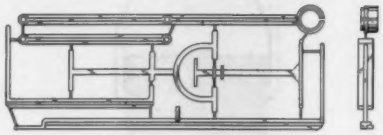
252,444
BOTTLE
Albert H. Torongo, Jr., Yardley, Pa., assignor to The Procter & Gamble Company, Cincinnati, Ohio
Filed Mar. 14, 1977, Ser. No. 777,199
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—116

252,445
BOTTLE
David A. Rhodes, Absecon, N.J., assignor to Carson Products Company, Savannah, Ga.
Filed May 6, 1977, Ser. No. 794,635
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—141

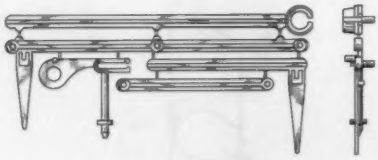
252,446
DISPENSING CARTON
David K. Traugott, Diamond Bar, Calif., assignor to Kimberly-Clark Corporation
Filed Aug. 20, 1976, Ser. No. 716,294
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—171



252,447
PANTOGRAPH PACKAGE
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Company, Skokie, Ill.
Filed Apr. 25, 1977, Ser. No. 790,746
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193

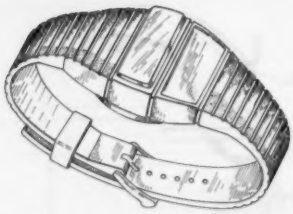


252,448
PANTOGRAPH PACKAGE
Sam Kupperman, Chicago, and Dennis Kupperman, Glenview, both of Ill., assignors to RB Toy Development Company, Skokie, Ill.
Filed Apr. 25, 1977, Ser. No. 790,747
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193

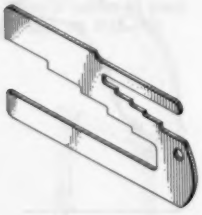


252,449
CLOCK
Merritt J. Nelson, 857 Indian Lake Rd., Sparta, Mich. 49345
Filed Nov. 3, 1975, Ser. No. 627,942
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—12

252,450
WRIST WATCH
Eugene J. Sulek, Plano, and Clarence D. Zierhut, Richardson, both of Tex., assignors to Texas Instruments Incorporated
Filed Jun. 1, 1977, Ser. No. 802,408
Term of patent 14 years
Int. Cl. D10—*02*
U.S. Cl. D10—32

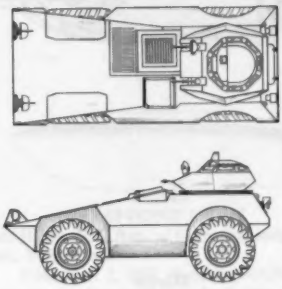


252,451
CHAIN WEAR INSPECTION GAUGE
Edward R. Behnke, Lockport, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.
Filed Jan. 13, 1978, Ser. No. 869,114
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—64

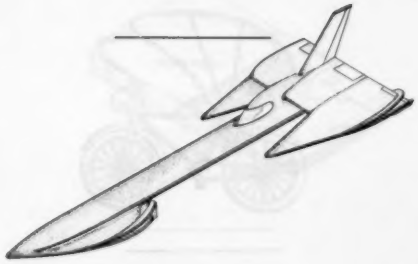


252,452
TENNIS CHARM PENDANT OR SIMILAR ARTICLE
Andrew A. Fermahin, P.O. Box 27885, Honolulu, Hi. 96827
Continuation-in-part of Ser. No. 766,361, Feb. 7, 1977, abandoned. This application Oct. 16, 1978, Ser. No. 951,839
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—81

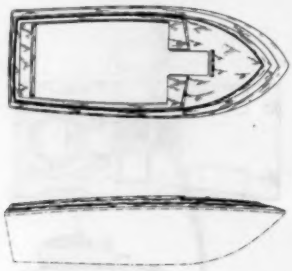
252,453
COMBINED ARMORED VEHICLE AND TURRET
Irving Appelblatt, West Bloomfield, and Theodore A. Jackson, Utica, both of Mich., assignors to Cadillac Gage Company
Filed Mar. 14, 1977, Ser. No. 777,172
Term of patent 14 years
Int. Cl. D12—*13*
U.S. Cl. D12—12



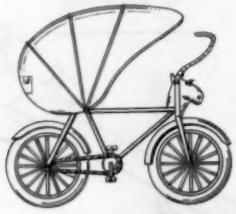
252,454
HIGH PERFORMANCE WATER VEHICLE
Arthur L. Williams, 11301 Yolanda Ave., Los Angeles, Calif. 91324
Filed Mar. 1, 1977, Ser. No. 773,316
Term of patent 14 years
Int. Cl.[2] D12—*06*
U.S. Cl. D12—66



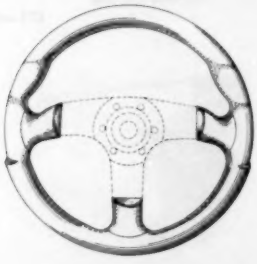
252,455
BOAT DECK
John K. Adams, P.O. Box 5370 West Village, Aspen, Colo. 81615
Filed Apr. 7, 1977, Ser. No. 785,491
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—70



252,456
BICYCLE
Esther M. Phillips, 1336 Straight Path, Wyandanch, L. I., N.Y. 11798
Filed May 9, 1977, Ser. No. 794,791
Term of patent 14 years
Int. Cl. D12—*11*
U.S. Cl. D12—108



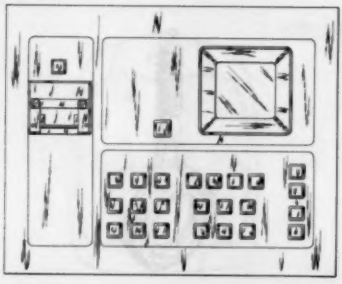
252,457
STEERING-WHEEL RIM, FOR MOTORCARS AND WATERCRAFT
Giovanni Conterno, Vedano Olona, Italy, assignor to Personal S.p.A., Abbiate Guazzone, Italy
Filed Jun. 29, 1977, Ser. No. 811,179
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—176



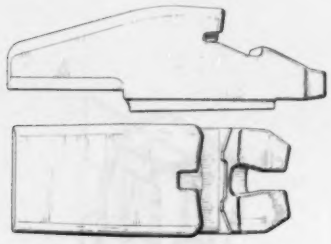
252,458
VEHICULAR INNER PROTECTIVE MUDGUARD
Leo Laine, Polttimonkatu 10, SF-26130 Rauma 13, Finland
Filed May 27, 1977, Ser. No. 801,051
Claims priority, application Finland, Feb. 24, 1977, 77126
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—184

252,459
VEHICULAR INNER PROTECTIVE MUDGUARD
Leo Laine, Polttimonkatu 10, SF-26130 Rauma 13, Finland
Filed May 27, 1977, Ser. No. 801,157
Claims priority, application Finland, Feb. 24, 1977, 77125
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—184

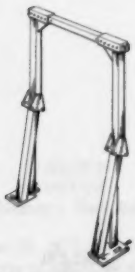
252,460
CONTROL PANEL FOR A FIRE CONTROL COMBAT SIMULATOR
Carmelo P. Milia, Troy, and Richard L. Gray, Fraser, both of Mich., assignors to Chrysler Corporation
Filed Apr. 11, 1977, Ser. No. 786,733
Term of patent 7 years
Int. Cl. D14—*02*
U.S. Cl. D14—40



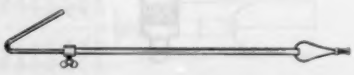
252,461
TOOTH ADAPTOR FOR EXCAVATING EQUIPMENT
Jouko K. Korpi, Degerfors, Sweden, assignor to Aktiebolaget Bofors, Bofors, Sweden
Filed Sep. 1, 1977, Ser. No. 829,840
Claims priority, application Sweden, Mar. 8, 1977, 770544
Term of patent 14 years
Int. Cl. D15—*04*
U.S. Cl. D15—28



252,462
ROLL BAR SAFETY FRAME FOR A TRACTOR
Malcolm White, Long Marston, nr. York, England, assignor to Susan Beck White, Tadcaster, England
Filed Nov. 4, 1977, Ser. No. 831,337
Claims priority, application United Kingdom, May 10, 1977, 980003/77
Term of patent 14 years
Int. Cl. D15—*03*
U.S. Cl. D15—28



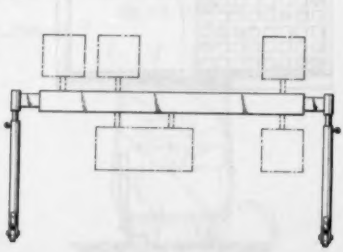
252,463
EXTENSIBLE STABILIZER FOR ATTACHMENT TO A BASS DRUM LUG WING NUT AND DRUMMER'S STOOL LEG OR THE LIKE
Joseph G. Cocuzzo, 84 D Marion Pepe Dr., Lodi, N.J. 07644
Filed Mar. 28, 1977, Ser. No. 781,735
Term of patent 14 years
Int. Cl. D17—*99, 04*
U.S. Cl. D17—22



252,464
FOUNTAIN PEN NIB
Elmer D. Thompson, Janesville, and Martin E. Wacha, Beloit, both of Wis., assignors to The Parker Pen Company, Janesville, Wis.
Filed Dec. 5, 1977, Ser. No. 857,871
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—55

252,465
TELEPHONE INDEX
Hans Halm, Herne, Fed. Rep. of Germany, assignor to Niveau AG, Basel, Switzerland
Filed Nov. 2, 1977, Ser. No. 847,745
Claims priority, application Switzerland, Jun. 16, 1977, 50/77
Term of patent 14 years
Int. Cl. D19—*02*
U.S. Cl. D19—76

252,466
DISPLAY BAR FOR REMOVABLY HOLDING STEMMED PLACARDS
William Tidwell, New York, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Nov. 14, 1977, Ser. No. 850,958
Term of patent 14 years
Int. Cl. D20—*03*
U.S. Cl. D20—41

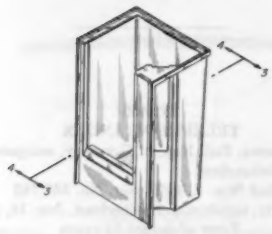


252,467

COMBINED SHOWER STALL AND HYDROTHERAPY BATHTUB

Roy A. Jacuzzi, Moraga, and Ralph D'Innocente, Pleasant Hill, both of Calif., assignors to Jacuzzi Whirlpool Bath, Inc., Walnut Creek, Calif.

Filed Dec. 7, 1977, Ser. No. 858,467
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—49



252,468

REFRIGERATION UNIT FOR TRUCKS

Ronald W. Seipp, Apple Valley, Minn., assignor to Thermo King Corporation, Minneapolis, Minn.

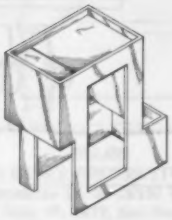
Filed Dec. 30, 1976, Ser. No. 755,770
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—142

252,469

CABINET FOR DENTAL UNIT

Robert L. Mallory, and Sheilah A. Mallory, both of 3160A N. Truckee La., Sparks, Nev. 89431

Filed Aug. 8, 1977, Ser. No. 822,621
Term of patent 14 years
Int. Cl. D24—*01*
U.S. Cl. D24—4



252,470

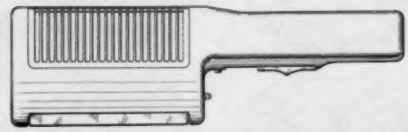
URINARY CATHETER ADAPTER HAVING A FILTERED AIR VENT, OR THE LIKE

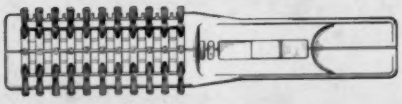
Kenneth E. Pawlak, Mundelein, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Jul. 22, 1977, Ser. No. 818,024
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—54

252,471
PERIPHERAL FRAME MEMBER FOR USE IN A MOTOR VEHICLE
Edward G. Broadbert, 91, Park La., Sandbach, Cheshire, England (CW119EE)
Filed Jan. 6, 1978, Ser. No. 867,414
Claims priority, application United Kingdom, Dec. 3, 1977, 982482/77
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D25—74

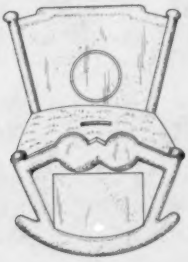
252,472
DRYER
John Wistrand, 74 Journey's End Rd., New Canaan, Conn. 06018
Filed Apr. 21, 1977, Ser. No. 789,379
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—13





252,473
CHESS PIECES
John W. Brown, 1847 W. Estes Ave., Chicago, Ill. 60626
Filed Aug. 9, 1976, Ser. No. 712,725
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—52

252,474
COMBINED BANK AND PHOTOGRAPH HOLDER
Herbert J. Abrams, 3675 N. Country Club Dr., North Miami Beach, Fla. 33180
Filed Sep. 17, 1976, Ser. No. 724,480
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D99—36



252,475
FLOATING WICK FLICKER LAMP
George A. Schwebel, Lancaster, Pa., assignor to Susquehanna Broadcasting Co., York, Pa.
Filed Oct. 27, 1977, Ser. No. 846,272
Term of patent 14 years
Int. Cl. D26—*01*
U.S. Cl. D48—2

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JULY, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. R. Nelson Co., Inc.: *See—*
Weiss, Kenneth; and Fieder, Martin, 4,161,853, Cl. 52-288.000.

AAI Corporation: *See—*
Jones, Robert E., Jr., 4,162,492, Cl. 340-723.000.

AB Bofors: *See—*
Bjornson, Bjorn O., 4,162,053, Cl. 244-3.270.

Abbott, Jerry J.; Bernardelli, William J.; Thompson, John A.; and Caudill, Allison H., to International Business Machines Corporation. Electrophotographic developer with carrier overflow control. 4,161,923, Cl. 118-658.000.

Abbott Laboratories: *See—*
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,162,305, Cl. 424-120.000.

Abe, Takeshi; Tsuchiya, Keishin; Saito, Kazuhito; Mizuta, Toshiaki; and Yoshihara, Ichiro, to Ricoh Co., Ltd. Data collection system. 4,162,484, Cl. 340-150.000.

Abels, Theodor; and Gotz, Bernhard, to Linde Aktiengesellschaft. Vehicle with internal-combustion engine. 4,161,992, Cl. 180-306.000.

ACF Industries, Incorporated: *See—*
Behle, Gunter R., 4,161,958, Cl. 137-316.000.

Achelpohl, Fritz; Tetenborg, Konrad; and Feldkamper, Richard, to Windmoller & Holscher. Apparatus for unreeling valved sacks which are reeled in overlapping formation. 4,162,025, Cl. 221-72.000.

Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., to Pfizer Inc. Acaricidal agents. 4,162,253, Cl. 260-306.70T.

Acres, Gary J. K.; Cooper, Barry J.; and Harrison, Brian, to Johnson, Matthey & Co., Limited. Catalysts. 4,162,235, Cl. 252-462.000.

Acro, Inc.: *See—*
Robinson, Mark L., 4,161,813, Cl. 29-460.000.

Adachi, Yoshiharu, to Aisin Seiki Kabushiki Kaisha. Hydraulic brake booster. 4,161,867, Cl. 60-547.00A.

Adrian, Renate; von Schenck, Raban; Somme, Klaus; and Weber, Hermann, to Hoechst Aktiengesellschaft. Production of Maddrell salt. 4,162,300, Cl. 423-314.000.

Advance Achievement Systems, Inc.: *See—*
Naffziger, Dewein H., 4,162,156, Cl. 75-12.000.

Advanced Metals Research Corp.: *See—*
Baumgarten, Neil H., 4,162,403, Cl. 250-396.0ML.

Aerojet-General Corporation: *See—*
Qasim, Javed, 4,162,057, Cl. 251-168.000.

Agency of Industrial Science & Technology: *See—*
Gonda, Shunichi, 4,162,460, Cl. 331-94.50H.
Hamasaki, Masanobu, 4,162,383, Cl. 219-68.000.

Air Products and Chemicals, Inc.: *See—*
Spector, Marshall L., 4,162,153, Cl. 71-12.000.

Aisin Seiki Co., Ltd.: *See—*
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,919, Cl. 112-275.000.
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,920, Cl. 112-275.000.
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,921, Cl. 112-275.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Adachi, Yoshiharu, 4,161,867, Cl. 60-547.00A.
Kamiyama, Shuichi, 4,161,866, Cl. 60-517.000.

Akamatsu, Masahiko, to Mitsubishi Denki Kabushiki Kaisha. Semiconductor switch. 4,162,413, Cl. 307-253.000.

Aktiebolaget Kalle-Regulatorer: *See—*
Solyom, Peter; Boman, Bengt; and Bjorndal, Hakan, 4,162,195, Cl. 43-310.000.

Aktiebolaget SKF: *See—*
Hallerback, Stig L.; and Lachonius, Leif, 4,162,039, Cl. 239-214.250.

Aladjem, Frederick J.; and Ayenger, Padmasini K. Quantitative protein analysis by immunodiffusion. 4,162,208, Cl. 204-180.00G.

Alber, Franz. Ski binding. 4,162,089, Cl. 280-618.000.

Alfred University Research Foundation Inc.: *See—*
Crandall, William B.; and Wasserstein, Linda J., 4,162,334, Cl. 426-505.000.

Alfs, Helmut: *See—*
List, Ferdinand; and Alfs, Helmut, 4,162,365, Cl. 562-416.000.

All Phase Electronics, Inc.: *See—*
Whitson, Donald W., 4,161,925, Cl. 119-158.000.

Alleman, Carl E., to Phillips Petroleum Company. Regeneration of liquid absorbents. 4,162,145, Cl. 55-32.000.

Allied Chemical Corporation: *See—*
Fisher, William B.; and Van Peppen, Jan F., 4,162,267, Cl. 260-586.00P.
Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., 4,162,295, Cl. 423-61.000.

American Brands, Inc.: *See—*
Glock, Eugene, 4,161,953, Cl. 131-140.00P.

American Cyanamid Company: *See—*
Granzow, Albrecht H., 4,162,278, Cl. 525-2.000.

American Filtrona Corporation: *See—*
Collins, Terrence, 4,161,823, Cl. 33-179.000.

American Home Products Corp.: *See—*
Henderson, Gary A.; and Williams, Guy H., Jr., 4,162,515, Cl. 361-232.000.

American Hydraulic Propulsion Systems, Inc.: *See—*
Tobias, Jaromir, 4,161,906, Cl. 91-498.000.

American Manufacturing Company: *See—*
Rones, James M., 4,162,344, Cl. 428-212.000.

Amick, James L. Vertical-axis windmill. 4,162,410, Cl. 290-55.000.

Anderson Company, The: *See—*
Mohnach, Michael G.; Harbison, William H.; and Wittwer, Robert O., 4,161,798, Cl. 15-250.130.

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Anderson, Harry E.; Helsel, Kenneth E.; and Heasley, Raymond E., 4,162,060, Cl. 266-49.000.

Anderson, George A., to Honeywell Inc. Triangular high speed I/O system for content addressable memories. 4,162,535, Cl. 364-900.000.

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Ando, Hisashige, to Fujitsu Limited. Clocked memory with delay establisher by drive transistor design. 4,162,540, Cl. 365-194.000.

Andreev, Anatoly S.; Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., to Institut Radiotekhniki i Elektroniki Akademii Nauk SSSR. Acoustic surface wave transducer and filter built around this transducer. 4,162,415, Cl. 310-313.000.

Andrews, Allen H.: *See—*
Stone, Vaughn L.; Rhind, Terence K.; Andrews, Allen H.; and Hendrie, John M., 4,161,887, Cl. 73-720.000.

Andrews, Peter: *See—*
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,162,319, Cl. 424-250.000.

Ansorge, Werner. Static circuit arrangement for production of 3-phase current of variable frequency and output power. 4,162,523, Cl. 363-43.000.

Antenore, Ronald L.: *See—*
Capra, Nicholas G.; and Antenore, Ronald L., 4,162,030, Cl. 222-321.000.

Appalachian Electronic Instruments, Inc.: *See—*
Nickell, Larry C.; and McCormack, John L., 4,162,479, Cl. 340-63.000.

Applegate, Robert D. Incineration apparatus with adjustable air curtain. 4,161,916, Cl. 110-203.000.

Arcella, Frank G.; Wolf, Charles B.; and Fey, Maurice G., to Westinghouse Electric Corp. Liquid silicon casting control mechanism. 4,162,291, Cl. 422-198.000.

Archer, Jean-Francois, to Stas - Societe Technique d'Accessoire Specialises. Cable slings. 4,162,095, Cl. 294-74.000.

Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., to General Electric Company. Molten salt leach for removal of inorganic cores from directionally solidified eutectic alloy structures. 4,162,173, Cl. 134-2.000.

Arnold, Fred E.; Reinhardt, Bruce A.; and Hedberg, Frederick L., to United States of America, Air Force. Aromatic enyne compounds and their synthesis. 4,162,265, Cl. 260-578.000.

Arya, Satya P., to General Atomic Company. Method for container loading and unloading. 4,162,018, Cl. 414-786.000.

Arzberger, William; and Brown, Merle S., to Jet Spray Corp. Dispenser for perishable beverages. 4,161,971, Cl. 141-362.000.

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Miyake, Tetsuya; Noguchi, Kohji; and Fujimoto, Kohichi, 4,162,268, Cl. 260-592.000.

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Frank, Harry, 4,162,442, Cl. 323-106.000.

Ash, Darrell L., to Texas Instruments Incorporated. MESFET-device surface-wave-device channel selector. 4,162,451, Cl. 325-451.000.

Ash, Darrell L., to Texas Instruments Incorporated. Channel selection for a television receiver having low-gain high frequency RF-IF section. 4,162,452, Cl. 325-373.000.

Ashlow Steel & Engineering Company, Limited: *See—*
Ashton, John C., 4,161,872, Cl. 72-95.000.

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Ashworth, Gordon, to Scapa-Porritt Limited. Paper makers wet felts. 4,162,190, Cl. 162-359.000.

Atlantic Richfield Company: *See—*
Shawl, Edward T., 4,162,362, Cl. 560-25.000.

Atlas Copco Aktiebolag: *See*—
Dolejsi, Miroslav, 4,161,996, Cl. 181-230.000.
Forsberg, Bo E.; and Ekwall, Carl G. B., 4,161,990, Cl. 173-105.000.

Aubry, Andre; and Bichara, Michel, to Mines de Potasse d'Alsace S.A. Recovery of magnesium chloride from brines. 4,162,297, Cl. 423-158.000.

Auto Steering Trailers Limited: *See*—
Curry, Norman R., 4,162,082, Cl. 280-81.00A.

Automation Industries, Inc.: *See*—
Dunn, George T.; and Choiniere, Alcide W., 4,162,370, Cl. 174-47.000.

Avalanche Limited: *See*—
Varmuza, Milan J., 4,161,915, Cl. 108-144.000.

Avco Corporation: *See*—
Gochis, George G., 4,162,491, Cl. 340-646.000.

Avrillon, Jean-Claude, to J. I. Case Company. Self-propelled translatable working unit for tractor vehicle. 4,162,087, Cl. 280-460.00A.

Avrutsky, Grigory Y.: *See*—
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

Ayasse, Paul: *See*—
Schultze, Volker; and Ayasse, Paul, 4,162,072, Cl. 273-96.00R.

Ayenger, Padmasini K.: *See*—
Aladjem, Frederick J.; and Ayenger, Padmasini K., 4,162,208, Cl. 204-180.00G.

Ayvazian, Norman R. Skate blade analyzer. 4,161,822, Cl. 33-174.00R.

Aziende Chimiche Riunite Angelini Francesco A.C.R.A.F. S.p.A.: *See*—
Silvestrini, Bruno, 4,162,318, Cl. 424-250.000.

Babcock & Wilcox Company, The: *See*—
Sprague, Theodore S., 4,161,967, Cl. 138-113.000.

Bacon, James R., to Burroughs Corporation. Method and apparatus for displaying radar video registered with computer generated data on a television monitor. 4,162,494, Cl. 343-5.0EM.

Bagdasarian, Alexandr S.: *See*—
Andreev, Anatoly S.; Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,162,415, Cl. 310-313.000.

Bakalova, Yovka P.: *See*—
Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.

Balboni, Allen J., to Bel Air Industries Inc. Electric heating mattress. 4,162,393, Cl. 219-217.000.

Balduzzi, Richard R.; and French, Richard W., to Balduzzi, Richard R. Solid state thermostat with digital display. 4,162,036, Cl. 236-47.000.

Baldwin, Derek: *See*—
Gates, Peter S.; and Baldwin, Derek, 4,162,154, Cl. 71-88.000.

Ballantyne, Joseph M., to Cornell Research Foundation, Inc. Tunnel injection of minority carriers in semi-conductors. 4,161,814, Cl. 29-580.000.

Ballast-Nedam Groep N.V.: *See*—
Rooymans, Joannes A., 4,162,102, Cl. 299-10.000.

Banks, Roger J.: *See*—
Brearley, Malcolm; and Banks, Roger J., 4,162,443, Cl. 324-78.00D.

Barber, Antony D., to CompAir Construction & Mining Limited. Reciprocating hydraulic motors. 4,161,989, Cl. 173-105.000.

Barger, Frank L.: *See*—
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,162,197, Cl. 196-14.520.

Barleen, David G.: *See*—
Silverman, Howard M.; Barleen, David G.; and DeLalla, Thomas R., 4,162,488, Cl. 340-505.000.

Barnes, George H., to Burroughs Corporation. Parallel alignment network for d-ordered vector elements. 4,162,534, Cl. 364-900.000.

Barnes, Robert W., to Lavelle Aircraft Company. Mobile cargo-container lock. 4,161,870, Cl. 70-278.000.

Bartholemew, Glen W., Jr., to Wine Breather, Inc. Wine aerator. 4,162,129, Cl. 366-211.000.

Barton, George G., Jr.: *See*—
Feldman, Sidney; and Barton, George G., Jr., 4,162,124, Cl. 356-4.000.

Bartos, Dezso I.; and Rybczynski, Jerzy, to Bartos, Dezso Istvan. Ready-for-use rapid test package for serological tests. 4,162,003, Cl. 206-219.000.

Bartos, Dezso Istvan: *See*—
Bartos, Dezso I.; and Rybczynski, Jerzy, 4,162,003, Cl. 206-219.000.

BASF Aktiengesellschaft: *See*—
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, 4,162,200, Cl. 203-58.000.
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.
Zanker, Fritz, 4,162,263, Cl. 260-453.00P.

Baslow, Floyd. Frame assembly for mounting fabric sheets. 4,161,977, Cl. 160-381.000.

Battelle Memorial Institute: *See*—
Bichon, Daniel, 4,161,948, Cl. 128-156.000.

Baudoux, Jean-Pierre; and Macchi, Cesar D., to Telecommunications Radioelectriques et Telephoniques TRT. Digital echo canceler for a modem for data transmission by means of modulation of a carrier. 4,162,378, Cl. 179-170.200.

Bauer, Heinrich F.; Helbling, Gerhard; and Hildebrandt, Florian, to Motoren-und Turbinen-Union Munchen GmbH. Method for the determination of the axial thrust of roller bearings. 4,161,877, Cl. 73-140.000.

Baumgarten, Neil H., to Advanced Metals Research Corp. Method and means for compensating for charge carrier beam astigmatism. 4,162,403, Cl. 250-396.0ML.

Bayer Aktiengesellschaft: *See*—
Hentschel, Claus; Martin, Karl; and Volckaert, Leonard, 4,161,844, Cl. 47-62.000.
Klotz, Gunther, 4,162,215, Cl. 210-21.000.
Kranz, Eckart, 4,162,280, Cl. 260-968.000.
Kubens, Rolf; and Heine, Heinrich, 4,162,357, Cl. 528-67.000.
Kuhle, Engelbert; Klauke, Erich; and Frohberger, Paul-Ernst, 4,162,329, Cl. 424-319.000.
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,162,310, Cl. 424-200.000.
Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 4,162,320, Cl. 424-251.000.
Rosenkranz, Hans J., 4,162,274, Cl. 528-75.000.
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.

Bayerische Motoren Werke AG: *See*—
Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, 4,162,478, Cl. 340-52.00F.

Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., to Vsesojuzny Nauchno-Issledovatelsky Proektno-Tekhnologichesky Institut Vagonostroenia. Braking system for a railway car. 4,162,107, Cl. 303-3.000.

BBC Brown, Boveri & Company, Limited: *See*—
De Bruyne, Patrick; and Niemeyer, Lutz, 4,162,514, Cl. 361-2.000.

Beach, Richard L., to Hunt-Wesson Foods, Inc. Apparatus for sorting fruits and vegetables. 4,162,011, Cl. 209-637.000.

Beard, James H.; Lea, Cyril; and Ludwig, Bernard W., to Production Engineering Research Association of Great Britain, The. Method of withdrawing elongate tubular members. 4,161,810, Cl. 29-427.000.

Becker, Colman L.: *See*—
Crawford, Duffer B.; Becker, Colman L.; and LeBlanc, Joseph R., 4,162,290, Cl. 422-190.000.

Becker, Dale F., to Sangamo Weston, Inc. Meter box with disconnect means. 4,162,516, Cl. 361-372.000.

Beckman Instruments, Inc.: *See*—
Jerrold-Jones, Paul, 4,162,211, Cl. 204-195.00G.
Pierre, Kenneth J.; Tung, Ker-Kong; and Nadj, Henriette, 4,162,194, Cl. 435-15.000.

Beecham, David; and Kirsch, Howard C., to Bell Telephone Laboratories, Incorporated. Dynamic sense-refresh detector amplifier. 4,162,416, Cl. 307-362.000.

Beecham Group Limited: *See*—
Box, Stephen J.; and Hood, John D., 4,162,304, Cl. 424-117.000.

Begnaud, John D.: *See*—
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,162,197, Cl. 196-14.520.

Behle, Gunter R., to ACF Industries, Incorporated. Fixture assembly for removing operating assembly from bottom operable tank car valve while closure portion remains in closed position in the tank. 4,161,958, Cl. 137-316.000.

Behrenz, Wolfgang: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,162,310, Cl. 424-200.000.

BEI Electronics, Inc.: *See*—
Hudson, Charles L., 4,162,399, Cl. 250-231.0SE.

Bel Air Industries Inc.: *See*—
Balboni, Allen J., 4,162,393, Cl. 219-217.000.

Belforte, Piero, to CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A. Method of and means for establishing two-way communication between two stations interconnected by a single signal link. 4,162,371, Cl. 178-58.00R.

Belikov, Vladimir G.: *See*—
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

Bell Telephone Laboratories, Incorporated: *See*—
Beecham, David; and Kirsch, Howard C., 4,162,416, Cl. 307-362.000.
Bobeck, Andrew H., 4,162,537, Cl. 365-19.000.
D'Asaro, Lucian A.; and Okinaka, Yutaka, 4,162,337, Cl. 427-92.000.
Maldonado, Juan R.; and Maydan, Dan, 4,162,528, Cl. 364-563.000.
Mearns, Allison B., 4,162,377, Cl. 179-18.00D.

Bender, Detlef: *See*—
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.

Bendig, Lothar; and Fusser, Rolf, to Filterwerk Mann & Hummel GmbH. Device for regulating the intake air temperature of a carburetor-equipped internal combustion engine. 4,161,930, Cl. 123-122.00D.

Bendix Corporation, The: *See*—
Laird, James C.; and Tomlin, Robert L., 4,161,883, Cl. 73-421.50A.

Bengt Petersson New Products Investment AB: *See*—
Darnfors, Kristina E., 4,161,794, Cl. 5-441.000.

Benseler, Hans; and Schaefer, Horst, to Puma-Sportschuhfabriken Rudolf Dassler KG. Outer sole for shoe especially sport shoes as well as shoes provided with such outer sole. 4,161,828, Cl. 36-32.00R.

Berg, Mark J. Device for arm wrestling. 4,162,068, Cl. 273-1.00E.
Bergamini, Giorgio, to Nuovo Pignone S.p.A. Seven-segmented electromechanical digital indicator. 4,161,832, Cl. 40-451.000.
Bergmann, Rolf: *See—*
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.
Bergna, Horacio E., to Du Pont de Nemours, E. I., and Company. Foundry mold or core compositions and method. 4,162,238, Cl. 260-29.60S.
Berlekamp, Elwyn R., to Cyclotomics, Inc. Galois field computer. 4,162,480, Cl. 340-146.1AL.
Bernard, Antoine: *See—*
Girard, Jean-Philippe; and Bernard, Antoine, 4,162,374, Cl. 179-1.0HF.
Bernardelli, William J.: *See—*
Abbott, Jerry J.; Bernardelli, William J.; Thompson, John A.; and Caudill, Allison H., 4,161,923, Cl. 118-658.000.
Bernardo, Edward T.; Faure, Louis H.; Johnson, Alfred H.; and Pittwood, Donald G., to International Business Machines Corporation. Method and apparatus for making a semiconductor device mounting element embodying an embedded fan-out wire arrangement. 4,161,817, Cl. 29-630.00B.
Bernath, Gabor: *See—*
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.
Bertram, James L., to Dow Chemical Company, The. Coating compositions. 4,162,244, Cl. 260-37.0EP.
Best, Dennis O.: *See—*
Best, Gordon K.; and Best, Dennis O., 4,162,088, Cl. 280-606.000.
Best, Gordon K.; and Best, Dennis O. Powered snow ski. 4,162,088, Cl. 280-606.000.
Beyers, Billy W., Jr.; and Suchko, Adam J., to RCA Corporation. Television system scheduler. 4,162,513, Cl. 358-191.000.
Bhalla, Ranbir S., to Westinghouse Electric Corp. Method of forming arc tube end seal. 4,162,151, Cl. 65-42.000.
Bhasin, Madan M.: *See—*
Ellgen, Paul C.; and Bhasin, Madan M., 4,162,262, Cl. 260-449.00R.
Bhat, Manjeshwar S.: *See—*
Parker, Earl R.; Zackay, Victor F.; Bhat, Manjeshwar S.; and Garrison, Warren M., Jr., 4,162,157, Cl. 75-124.000.
Bichara, Michel: *See—*
Aubry, Andre; and Bichara, Michel, 4,162,297, Cl. 423-158.000.
Bichon, Daniel, to Battelle Memorial Institute. Synthetic membrane for wound-dressings. 4,161,948, Cl. 128-156.000.
Birt, David R., to Communications Patents Limited. Amplifier systems. 4,162,455, Cl. 330-10.000.
Bissell, Robert D., to Dresser Industries, Inc. Pressure gauge construction. 4,161,888, Cl. 73-740.000.
Bjerke, Leiv, to Thune-Eureka A/S. Submersible, hydraulically-driven pump rotating about a vertical axis. 4,162,137, Cl. 417-405.000.
Bjorndal, Hakan: *See—*
Solyom, Peter; Boman, Bengt; and Bjorndal, Hakan, 4,162,195, Cl. 43-310.000.
Bjornson, Bjorn O., to AB Bofors. Brake device for rotating body. 4,162,053, Cl. 244-3.270.
Black, John W., to Pemco-Kalamazoo, Inc. Rotary indexing mechanism. 4,161,893, Cl. 74-813.00R.
Blaupunkt-Werke GmbH: *See—*
Pohlmann, Gottfried; and Schneider, Egon, 4,161,995, Cl. 181-150.000.
Bljukherova, Nina A.: *See—*
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.
Bloxham, Samuel D., to Moffatt, Donald B. Air inlet apparatus. 4,161,941, Cl. 126-85.00B.
Board of Regents, for and on behalf of the University of Florida: *See—*
Tsibris, John C. M., 4,162,355, Cl. 526-293.000.
Bobeck, Andrew H., to Bell Telephone Laboratories, Incorporated. Magnetic bubble memory. 4,162,537, Cl. 365-19.000.
Bobrick, Mitchell, to Eldon Industries, Inc. Vertical file construction. 4,162,014, Cl. 211-50.000.
Boman, Bengt: *See—*
Solyom, Peter; Boman, Bengt; and Bjorndal, Hakan, 4,162,195, Cl. 43-310.000.
Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, to Swacars Sales, Inc. Trailer apparatus and ground support therefor. 4,162,086, Cl. 280-425.00R.
Bonnie Enterprises, Inc.: *See—*
Hennisse, Bonnie C.; and Cousins, Synde, 4,161,806, Cl. 24-201.00A.
Borer, Werner J.; Kugler, Tibor; and Zuzak, Tomas, to Swiss Aluminium Ltd. Method of melting magnetically weak particles of arbitrary shape into substantially spherically-shaped globules. 4,162,283, Cl. 264-15.000.
Borgschulte, Fritz: *See—*
Georg, Werner; Heberling, Walter; and Borgschulte, Fritz, 4,162,103, Cl. 299-43.000.
Borom, Marcus P.: *See—*
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,162,173, Cl. 134-2.000.
Bossert AG: *See—*
Bossert, Walter, 4,161,891, Cl. 74-548.000.
Bossert, Friedrich: *See—*
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.
Bossert, Walter, to Bossert AG. Operating handle attachment arrangement, particularly window crank for automotive vehicles. 4,161,891, Cl. 74-548.000.
Bothun, Maynard E.; Larson, Curtis A.; Lightner, Gayland E.; and Wilson, David R., to International Business Machines Corporation. Magazine-lid combination for jacketed magnetic disks. 4,162,007, Cl. 206-444.000.
Bould, Fred; and Kowalik, Peter M., to Westinghouse Electric Corp. Dual spring circuit interrupter apparatus. 4,162,385, Cl. 200-153.0SC.
Bourgeois, James E.; and Josemans, Leonardus J., to Cutler-Hammer, Inc. Method of and means for securing an electric switch operating lever in a one-hole mounting bushing. 4,162,386, Cl. 200-339.000.
Bourns, Inc.: *See—*
Hansen, Emmert S., 4,162,408, Cl. 250-555.000.
Stone, Vaughn L.; Rhind, Terence K.; Andrews, Allen H.; and Hendrie, John M., 4,161,887, Cl. 73-720.000.
Bouton, Daniel A.; Martoglio, Jean E.; and Maulat, Jean-Pierre, to Societe Nationale d'Etude et de Construction de Moteurs d'Aviation. Linear spring and end thrust member. 4,162,064, Cl. 267-177.000.
Boutros, Kamal S.: *See—*
Nijman, John P.; and Boutros, Kamal S., 4,162,469, Cl. 335-186.000.
Bouyssounouse, Bernard; and Bouyssounouse, Chantal. Apparatus for communicating receipt of transmitted messages. 4,162,449, Cl. 325-55.000.
Bouyssounouse, Chantal: *See—*
Bouyssounouse, Bernard; and Bouyssounouse, Chantal, 4,162,449, Cl. 325-55.000.
Bowman, Robert W.: *See—*
Frano, Paul A.; Bowman, Robert W.; Drapeau, Donald F.; and Kain, Marino, 4,161,816, Cl. 29-628.000.
Box, Stephen J.; and Hood, John D., to Beecham Group Limited. Streptomycetal antibiotic. 4,162,304, Cl. 424-117.000.
Boyer, Stephen K.; and Slater, Steven M. Process for the conversion of sulfur dioxide. 4,162,207, Cl. 204-157.10R.
Brackmann, Richard T.: *See—*
Fite, Wade L.; Myers, Richard L.; and Brackmann, Richard T., 4,162,404, Cl. 250-423.00R.
Bradbury, Walter C.: *See—*
Wilson, Harold P.; and Bradbury, Walter C., 4,162,205, Cl. 204-43.00S.
Bradshaw, Janice; Cook, Martin C.; and Gregory, Gordon I., to Glaxo Laboratories Limited. 3-Carbamoyloxymethyl-7-substituted oximino acetamido cephalosporanic acid derivatives. 4,162,360, Cl. 544-16.000.
Braid, Milton, to Mobil Oil Corporation. Lubricant compositions of enhanced antioxidant properties. 4,162,225, Cl. 252-50.000.
Brazier, Ernest R., to ERCO Industries Limited. Assembly of furnace electrodes. 4,162,368, Cl. 13-18.00C.
Brearley, Malcolm; and Banks, Roger J., to Girling Limited. Speed measuring systems. 4,162,443, Cl. 324-78.00D.
Brecher, Lee E.: *See—*
Hirayama, Chikara; and Brecher, Lee E., 4,162,302, Cl. 423-579.000.
Breitenbach, Otto, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Delay line. 4,162,464, Cl. 333-138.000.
Brice, Henry T.: *See—*
Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,162,086, Cl. 280-425.00R.
Bridger, Robert F., to Mobil Oil Corporation. Solubilized borates of bis-oxazoline and lubricant compositions containing the same. 4,162,224, Cl. 252-49.600.
Brinkley, James W.: *See—*
Specker, Lawrence J.; Higgins, Aubin M.; and Brinkley, James W., 4,161,874, Cl. 73-12.000.
British Industrial Plastics Limited: *See—*
Ogden, Dennis H.; and Smith, Frank G., 4,162,128, Cl. 366-154.000.
British Steel Corporation: *See—*
Peace, John; Wright, Harold; and Clague, Kenneth, 4,162,471, Cl. 335-291.000.
Broder, Alan; Shapiro, Paul; and Yee, Seening, to Sperry Rand Corporation. Yaw-compensated correlating sonar tracking system. 4,162,474, Cl. 340-6.00R.
Brooks, Carson L.; Carson, John W.; and Culbreth, Garland T., to Reynolds Metals Company. Ingot casting. 4,161,978, Cl. 164-49.000.
Brouwer Turf Equipment Limited: *See—*
Gerrits, Theodorus P. H., 4,161,858, Cl. 56-7.000.
Brown, Alvin E., to Du Pont de Nemours, E. I., and Company. Piezoelectric ultrasonic transducer with damped housing. 4,162,111, Cl. 310-326.000.
Brown, Arthur V., Jr.; and Karrasch, Richard J., to Jim Dandy Company, The. Monosaccharide-containing dry pet food having yieldable elastic structure. 4,162,336, Cl. 426-623.000.
Brown, Donald A.; and LaLonde, Paul D., to Donn Products, Inc. Suspension ceiling system. 4,161,856, Cl. 52-667.000.
Brown, Harry J.; and Chopra, Kuldip S., to Union Carbide Corporation. Hard facing of metal substrates. 4,162,392, Cl. 219-146.510.
Brown, Merle S.: *See—*
Arzberger, William; and Brown, Merle S., 4,161,971, Cl. 141-362.000.

Brown, Michael H.; and Myatt, John, to United Kingdom Atomic Energy Authority. Thermoelectric battery, protected against shocks and accelerations. 4,162,369, Cl. 136-202.000.

Brown, Michael J., to GAF Corporation. Phenoxybenzylphosphonium salts and derivatives thereof and use as fungicides. 4,162,312, Cl. 424-211.000.

Brown, Michael J., to GAF Corporation. Phenoxybenzylphosphonium salt insecticides. 4,162,313, Cl. 424-217.000.

Bucaro, Joseph A.; Carome, Edward F.; and Dardy, Henry D., to United States of America, Navy. Fiber optic acoustic sensor. 4,162,397, Cl. 250-199.000.

Buck, James R. Drill chuck. 4,162,080, Cl. 279-1.0DC.

Buck, Ronald G., to Litton Systems, Inc. Microwave oven sensing system. 4,162,381, Cl. 219-10.55B.

Buckley, Thomas F.; and Gleason, John G., to SmithKline Corporation. 3-Aminoazetidinone derivatives. 4,162,250, Cl. 260-239.00A.

Buhler, Hans-Eugen; Robusch, Gunter; Schafer, Herbert; and Peters, Karl-Heinz, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Cooling element for a metallurgical furnace. 4,162,061, Cl. 266-193.000.

Buhrer, Carl F., to GTE Laboratories Incorporated. Programmable divider. 4,162,450, Cl. 325-419.000.

Bunker Ramo Corporation: *See*—
Nijman, John P.; and Boutros, Kamal S., 4,162,469, Cl. 335-186.000.

Burger, Leland L.; and Scheele, Randall D., to United States of America, Energy. Separation of iodine from mercury containing scrubbing solutions. 4,162,206, Cl. 204-94.000.

Burke, Harry D., to Whirlpool Corporation. Waveguide assembly for microwave oven. 4,162,380, Cl. 219-10.55F.

Burlington Industries, Inc.: *See*—
Schwartz, William C., 4,162,342, Cl. 428-159.000.

Burroughs Corporation: *See*—
Bacon, James R., 4,162,494, Cl. 343-5.0EM.
Barnes, George H., 4,162,534, Cl. 364-900.000.
Cook, Darwen J.; and Millers, Donald A., II, 4,162,520, Cl. 364-200.000.
Horak, Anthony; Rachiatore, Felix A.; and Lada, Christopher O., 4,162,067, Cl. 271-177.000.
Lin, An-Chung R., 4,162,164, Cl. 106-21.000.
Su, Chauchang, 4,162,482, Cl. 340-146.30H.

Burroughs Wellcome Co.: *See*—
Wilkinson, Samuel, 4,162,307, Cl. 424-177.000.

Burton, Arthur; and Conway, Roy, to Imperial Chemical Industries Limited. Producing embossed wall- or ceiling-covering of cellulosic pulp and two different discrete thermoplastic materials. 4,162,180, Cl. 156-220.000.

Bushong, R. James: *See*—
Smith, Russell D.; and Bushong, R. James, 4,162,168, Cl. 106-58.000.

Butler, Denis V., to Plessey Handel und Investments AG. Method of producing chaff. 4,162,209, Cl. 204-192.00C.

Byrne, John R., to Will Ross Inc. Floating insert injection mold. 4,162,138, Cl. 425-125.000.

C.G.R. MeV: *See*—
Tran, Duc T., 4,162,423, Cl. 315-5.410.

Cadoff, Laurence H.; Mattox, Douglas M.; and Elms, Robert T., to Westinghouse Electric Corp. Compact ballast for fluorescent lamp which provides excellent lamp power regulation. 4,162,430, Cl. 315-309.000.

Calider: *See*—
Gentil, Patrick R., 4,161,830, Cl. 40-2.200.

Calvin, Natasha I.; and Ellis, Robert J. Water soluble extracts of certain marine red algae and processes for use thereof. 4,162,308, Cl. 424-195.000.

Calvin, Natasha I.; and Ellis, Robert J. Water soluble extracts of certain marine red algae and processes for use thereof. 4,162,309, Cl. 424-195.000.

Calzetta, Robert K., to General Signal Corporation. High resolution optical position code detector for information recorded on record carrier partially in humanly intelligible form. 4,162,035, Cl. 235-456.000.

Cambridge Instrument Company, Inc.: *See*—
Grossman, Hyman, 4,161,945, Cl. 128-696.000.

Camco, Incorporated: *See*—
Watkins, Fred E., 4,161,960, Cl. 137-458.000.
Watkins, Fred E., 4,161,984, Cl. 166-315.000.

Campana, Patsie C. Refractory article and method of making the same. 4,162,179, Cl. 156-89.000.

Campbell, Scott. Digital speedometer. 4,162,445, Cl. 324-175.000.

Camph Engineering Company AB: *See*—
Camph, Sven E., 4,161,999, Cl. 188-196.0BA.

Camph, Sven E., to Camph Engineering Company AB. Automatic slack adjuster. 4,161,999, Cl. 188-196.0BA.

Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence: *See*—
Fanning, Bryce L., 4,162,476, Cl. 340-10.000.

Canon Kabushiki Kaisha: *See*—
Tsunekawa, Tokuichi; Nakamura, Zenzo; Okubo, Osamu; and Uchiyama, Takashi, 4,162,426, Cl. 315-151.000.

Canter, Nathan H.; and Thame, Neville G., to Exxon Research & Engineering Co. Polyvinyl chloride thermoplastic blend compositions having improved glass transition tempratures. 4,162,241, Cl. 260-30.80R.

Capra, Nicholas G.; and Antenore, Ronald L., to J. Claybrook Lewis and Associates, Ltd. Disposable package dispenser having a pressure release channel. 4,162,030, Cl. 222-321.000.

Caraher, James R., to Machlett Laboratories, Inc., The. Method of fabricating image input screen. 4,162,115, Cl. 316-4.000.

Carey, Lee F., to Textron Inc. Extendible/expandable nozzle for rocket engines and the like and method of making same. 4,162,040, Cl. 239-265.330.

Carl Freudenberg, Firma: *See*—
Schmitt, Wilhelm; and Schumacher, Herbert, 4,161,976, Cl. 152-239.000.

Carome, Edward F.: *See*—
Bucaro, Joseph A.; Carome, Edward F.; and Dardy, Henry D., 4,162,397, Cl. 250-199.000.

Carpenter, David A., to MRC Corporation. Mass properties measurement system. 4,161,876, Cl. 73-65.000.

Carson, Andrew B., Jr.; and Tuso, Michael J., to General Electric Company. Drive circuit for printing head. 4,162,131, Cl. 400-124.000.

Carson, John W.: *See*—
Brooks, Carson L.; Carson, John W.; and Culbreth, Garland T., 4,161,978, Cl. 164-49.000.

Carson, William R., to Combustion Engineering, Inc. Apparatus for separating water and steam in a nuclear steam generator. 4,162,150, Cl. 55-337.000.

Carton-Craft Corp.: *See*—
Wagner, Kenneth E., 4,161,833, Cl. 40-539.000.

Cassidy, Patrick J.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, to Merck & Co., Inc. Antibiotics 890A$_1$ and 890A$_3$. 4,162,324, Cl. 424-274.000.

Caterpillar Tractor Co.: *See*—
Day, Ralph R., 4,161,865, Cl. 60-385.000.
Goloff, Alexander; and Denning, Ralph E., 4,161,890, Cl. 74-214.000.
Proeschl, Bernard E., 4,162,096, Cl. 296-196.000.

Caudill, Allison H.: *See*—
Abbott, Jerry J.; Bernardelli, William J.; Thompson, John A.; and Caudill, Allison H., 4,161,923, Cl. 118-658.000.

Celanese Corporation: *See*—
Jones, Rufus S., Jr.; Tan, Marshall; and Choe, Eui W., 4,162,346, Cl. 428-364.000.

Cella, Alexander. Modular steam generator for use in nuclear power plants. 4,162,191, Cl. 176-65.000.

Cellerini, Albert R.; Ricci, Louis N.; and Rexroad, James O., to Westinghouse Electric Corp. Circuit breaker contact structure. 4,162,467, Cl. 335-16.000.

Celt, James M.: *See*—
Larsen, Theodore E.; and Celt, James M., 4,162,425, Cl. 315-150.000.

Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie: *See*—
Economopoulos, Mario; Respen, Yves J.; and Wilmotte, Stephane H., 4,161,800, Cl. 15-302.000.

Chambers Corporation: *See*—
Scherer, Richard M., 4,161,939, Cl. 126-19.00R.

Chance, Britton; and Sorge, John R. Flying spot fluoro-meter for oxidized flavoprotein and reduced pyridine nucleotide. 4,162,405, Cl. 250-461.00B.

Chatterji, Arun K. Electrostatic toner with an antiplasticizer. 4,162,226, Cl. 252-62.10P.

Chemetal Corporation: *See*—
Holzl, Robert A., 4,162,345, Cl. 428-328.000.

Chemische Werke Huls Aktiengesellschaft: *See*—
List, Ferdinand; and Alfs, Helmut, 4,162,365, Cl. 562-416.000.

Cheney, William A., to United Air Specialists, Inc. Method and apparatus for treating electrically charged airborne particles. 4,162,144, Cl. 55-5.000.

Chevron Research Company: *See*—
House, Ralph, 4,162,242, Cl. 260-30.80R.
Miller, Stephen J., 4,162,212, Cl. 208-79.000.

Chicoine, Gustave J. Manual downshift deacceleration shift lever with switch array. 4,162,384, Cl. 200-61.880.

Chinoin Gyogysler Es Vegyeszeti Termeken Gyara Rt.: *See*—
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.

Choe, Eui W.: *See*—
Jones, Rufus S., Jr.; Tan, Marshall; and Choe, Eui W., 4,162,346, Cl. 428-364.000.

Choiniere, Alcide W.: *See*—
Dunn, George T.; and Choiniere, Alcide W., 4,162,370, Cl. 174-47.000.

Chokai, Shoichi: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.

Chopra, Kuldip S.: *See*—
Brown, Harry J.; and Chopra, Kuldip S., 4,162,392, Cl. 219-146.510.

Chrysler Corporation: *See*—
Dunne, Carroll J., Jr., 4,161,879, Cl. 73-229.000.
Eshelman, Robert W.; and Crall, Frederick W., 4,161,886, Cl. 73-722.000.
Teague, Kenneth W.; and Graham, Kenneth A., 4,161,928, Cl. 123-102.000.

Chudnovsky, Vladimir S.: *See*—
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.;

Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

Ciba-Geigy Corporation: *See—*
Ehrenfreund, Josef, 4,162,330, Cl. 424-322.000.

Cielo, Paolo; and Westwood, William D., to Northern Telecom Limited. Printer with electrostatic ink control. 4,162,502, Cl. 346-140.00R.

Clague, Kenneth: *See—*
Peace, John; Wright, Harold; and Clague, Kenneth, 4,162,471, Cl. 335-291.000.

Clark, Carl A.; and Rogala, John, to Eastern Company, The. Resin reinforced expansion anchor and method of installation. 4,162,133, Cl. 405-258.000.

Coburn, John W.; and Winters, Harold F., to International Business Machines Corporation. Utilizing saturated and unsaturated halocarbon gases in plasma etching to increase etch of SiO_2 relative to Si. 4,162,185, Cl. 156-643.000.

Cochran, Michael J., to Texas Instruments Incorporated. Transceiver with only one reference frequency. 4,162,446, Cl. 325-15.000.

Cohen, Allen L. Zonal bifocal contact lens. 4,162,122, Cl. 351-161.000.

Collins, Terrence, to American Filtrona Corporation. Circumference measuring gauge. 4,161,823, Cl. 33-179.000.

Collins, Warde T.; and Fey, Mary D., to Dow Corning Corporation. Method of preparing an improved organic resin composition and an improved organic resin thereby. 4,162,245, Cl. 260-40.00R.

Collonia, Harald, to VDO Adolf Schindling AG. Speed regulating device for motor vehicles. 4,161,994, Cl. 180-179.000.

Columbia Machine, Inc.: *See—*
Schmitt, Robert A., 4,162,016, Cl. 414-85.000.

Combustion Engineering, Inc.: *See—*
Carson, William R., 4,162,150, Cl. 55-337.000.
Mabery, Thomas L., 4,161,873, Cl. 72-324.000.

Communications Patents Limited: *See—*
Birt, David R., 4,162,455, Cl. 330-10.000.

CompAir Construction & Mining Limited: *See—*
Barber, Antony D., 4,161,989, Cl. 173-105.000.

Conca, Romeo: *See—*
Leithem, Phyllis C.; and Conca, Romeo, 4,162,359, Cl. 536-70.000.

Concepts For Children, Inc.: *See—*
Tucker, Larry H., 4,162,013, Cl. 211-43.000.

Constable, Philip J.: *See—*
Turner, Roy C.; and Constable, Philip J., 4,162,472, Cl. 338-116.000.

Conterno, Giovanni, to Personal S.p.A. Steering-wheel rim. 4,161,892, Cl. 74-552.000.

Conway, Roy: *See—*
Burton, Arthur; and Conway, Roy, 4,162,180, Cl. 156-220.000.

Conwell, Esther M., to Xerox Corporation. Waveguide imaging system. 4,162,118, Cl. 350-96.130.

Cook, Darwen J.; and Millers, Donald A., II, to Burroughs Corporation. Intelligent input-output interface control unit for input-output subsystem. 4,162,520, Cl. 364-200.000.

Cook, Martin C.: *See—*
Bradshaw, Janice; Cook, Martin C.; and Gregory, Gordon I., 4,162,360, Cl. 544-16.000.

Cooke, Chathan M., to United States of America, Energy. Dielectric gas mixtures containing sulfur hexafluoride. 4,162,227, Cl. 252-63.500.

Cooper, Barry J.: *See—*
Acres, Gary J. K.; Cooper, Barry J.; and Harrison, Brian, 4,162,235, Cl. 252-462.000.

Cooper, Scott A.: *See—*
Wilcox, Forrest S.; Pinsky, Jules; and Cooper, Scott A., 4,162,343, Cl. 428-212.000.

Copson, Alexander G. Divers exhaust valve. 4,161,947, Cl. 128-142.300.

Cornell Research Foundation, Inc.: *See—*
Ballantyne, Joseph M., 4,161,814, Cl. 29-580.000.

Cosgrove, James F.: *See—*
McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,162,066, Cl. 270-54.000.

Coulter Electronics, Inc.: *See—*
Fulwyler, Mack J.; and Hatcher, C. William, 4,162,282, Cl. 264-9.000.

Cousins, Synde: *See—*
Hennisse, Bonnie C.; and Cousins, Synde, 4,161,806, Cl. 24-201.00A.

Covington, Wayne F.: *See—*
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.

Cowan, Robert E.: *See—*
Doss, James D.; Cowan, Robert E.; Newell, Robert H.; and McCabe, Charles W., 4,161,950, Cl. 128-303.140.

Cox, Carl V., to Union Carbide Corporation. Injectable packing formulation containing flexible graphite. 4,162,078, Cl. 277-102.000.

Cox, Ian R.: *See—*
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,162,253, Cl. 260-306.70T.

Crall, Frederick W.: *See—*
Eshelman, Robert W.; and Crall, Frederick W., 4,161,886, Cl. 73-722.000.

Crandall, William B.; and Wasserstein, Linda J., to Alfred University Research Foundation Inc. Method for baking in terra sigillata coated pan. 4,162,334, Cl. 426-505.000.

Crawford, Duffer B.; Becker, Colman L.; and LeBlanc, Joseph R., to Pullman Incorporated. Parallel steam reformers to provide low energy process. 4,162,290, Cl. 422-190.000.

Creed, Clark E., to Monarch Machine Company, Inc. Theft prevention assembly for use with car wheels. 4,161,896, Cl. 81-121.00A.

Crepaco, Inc.: *See—*
Wakeman, Alden H., 4,161,909, Cl. 99-453.000.
Wakeman, Alden H.; and Heiliger, Leonard R., 4,162,127, Cl. 366-149.000.

Crepeau, Charles E.: *See—*
Mulvey, Robert F.; and Crepeau, Charles E., 4,161,855, Cl. 52-612.000.

Crico, Aurelio M., to PPG Industries, Inc. Purification and recovery of ethylene dichloride. 4,162,201, Cl. 203-67.000.

Crosby, George A.: *See—*
Leslie, John H.; and Crosby, George A., 4,161,910, Cl. 100-26.000.

Crow, David E.; and Harrison, Nathan E., to United Technologies Corporation. Wide channel seal. 4,162,077, Cl. 277-53.000.

Crute, Billy G., to Stant Manufacturing Company, Inc. Pressure-vacuum relief fuel tank cap with roll-over safety valve feature. 4,162,021, Cl. 220-202.000.

CSELT-Centro Studi e Laboratori Telecomunicazioni S.p.A.: *See—*
Belforte, Piero, 4,162,371, Cl. 178-58.00R.

Culbreth, Garland T.: *See—*
Brooks, Carson L.; Carson, John W.; and Culbreth, Garland T., 4,161,978, Cl. 164-49.000.

Curlis, Horace E., Jr., to Union Carbide Corporation. Anode body for solid electrolytic capacitor. 4,162,518, Cl. 361-433.000.

Curry, Norman R., to Auto Steering Trailers Limited. Self-steering dolly. 4,162,082, Cl. 280-81.00A.

Cutler-Hammer, Inc.: *See—*
Bourgeois, James E.; and Josemans, Leonardus J., 4,162,386, Cl. 200-339.000.
Heider, Erich E., 4,162,388, Cl. 219-96.000.

CUV "Progress": *See—*
Nedyalkov, Ivan P.; Kanchev, Kancho T.; and Trenkov, Svetoslav R., 4,162,409, Cl. 290-53.000.

Cybernet Electronic Corporation: *See—*
Teshirogi, Toshihiko; and Tsuruta, Sumio, 4,162,447, Cl. 325-18.000.

Cyclotomics, Inc.: *See—*
Berlekamp, Elwyn R., 4,162,480, Cl. 340-146.1AL.

Dahl, Erik Q., to Elkem-Spigerverket A/S. Method of producing mechanically strong pellets from non-oxidizable metal oxides. 4,162,284, Cl. 264-66.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, 4,162,316, Cl. 424-250.000.

Dallen, John A.; and Green, Harry W., to Standard Products Company, The. Waste disposal system and method. 4,161,792, Cl. 4-111.100.

Dana Corporation: *See—*
Yant, Kenneth B., 4,162,001, Cl. 192-53.00E.
Zlotek, Thaddeus F., 4,162,000, Cl. 192-41.00A.

Dardy, Henry D.: *See—*
Bucaro, Joseph A.; Carome, Edward F.; and Dardy, Henry D., 4,162,397, Cl. 250-199.000.

Darnfors, Kristina E., to Bengt Petersson New Products Investment AB. Inflatable cushion. 4,161,794, Cl. 5-441.000.

D'Asaro, Lucian A.; and Okinaka, Yutaka, to Bell Telephone Laboratories, Incorporated. Process for fabricating III–V semiconducting devices with electroless gold plating. 4,162,337, Cl. 427-92.000.

Datacon, Inc.: *See—*
Howard, Warren L.; and Dorcas, Eugene E., 4,162,027, Cl. 222-23.000.

Daughdrill, E. Chris: *See—*
Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,162,086, Cl. 280-425.00R.

Davis, Mark E.: *See—*
Feierstein, Harold E.; and Davis, Mark E., 4,162,236, Cl. 252-558.000.

Day, David R.; and McElroy, Lucian G. Fluid stripping apparatus. 4,161,801, Cl. 15-316.00R.

Day, Ralph R., to Caterpillar Tractor Co. Steering control with hydraulic follow-up. 4,161,865, Cl. 60-385.000.

Dayton Walther Corporation: *See—*
Walther, William D., 4,162,105, Cl. 301-12.00R.

DeAngelis, Larry E., to Ford Motor Company. Alternator having improved rectifier cooling. 4,162,419, Cl. 310-266.000.

De Bruyne, Patrick; and Niemeyer, Lutz, to BBC Brown, Boveri & Company, Limited. Arrangement for semiconductor power components. 4,162,514, Cl. 361-2.000.

De Candia, Ettore. Car body welding assembly system. 4,162,387, Cl. 219-79.000.

DeLalla, Thomas R.: *See—*
Silverman, Howard M.; Barleen, David G.; and DeLalla, Thomas R., 4,162,488, Cl. 340-505.000.

Delphin, Walter H.: *See—*
Horwitz, E. Philip; Delphin, Walter H.; and Mason, George W., 4,162,230, Cl. 252-301.10W.
Horwitz, E. Philip; and Delphin, Walter H., 4,162,231, Cl. 252-301.10W.

Del Rossi, Joseph: *See—*
Lawrence, Leo B.; and Del Rossi, Joseph, 4,162,106, Cl. 406-185.000.

Denning, Ralph E.: *See*—
Goloff, Alexander; and Denning, Ralph E., 4,161,890, Cl. 74-214.000.

Deppe, Hans-Raimund, to Siemens Aktiengesellschaft. Method for covering a first layer or layer sequence situated on a substrate with an additional second layer by a sputtering-on process. 4,162,210, Cl. 204-192.0EC.

DeSoto, Inc.: *See*—
Wood, Donald C.; and McLaughlin, Robert L., 4,162,186, Cl. 162-5.000.

Detecta-Kraan B.V.: *See*—
Stuitje, Cornelis C., 4,161,875, Cl. 73-23.000.

Detector Electronics Corporation: *See*—
Larsen, Theodore E.; and Celt, James M., 4,162,425, Cl. 315-150.000.

Dey, Arabinda N., to P. R. Mallory & Co. Inc. Means for improving contact between Li and the anode current collector. 4,162,202, Cl. 204-2.100.

D'Hooge, Richard E.; and Pasek, Frank S., to Rixson-Firemark, Inc. Heat-actuated door latch. 4,161,804, Cl. 16-48.500.

DHP Corporation: *See*—
Longo, James J., 4,162,172, Cl. 134-1.000.

Dickman, Michael D.: *See*—
Folsom, Max H.; and Dickman, Michael D., 4,162,196, Cl. 435-313.000.

Dienes Werke GmbH & Co. K.G.: *See*—
Wingen, Peter, 4,161,898, Cl. 83-171.000.

Dietz, Wolfgang F. W., to RCA Corporation. Regulator with short circuit protection. 4,162,434, Cl. 315-411.000.

Dingeldein, Elvira: *See*—
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.

DiTullio, Joseph G.; and Parad, Leonard I., to GTE Sylvania Incorporated. Diplexer apparatus. 4,162,463, Cl. 333-117.000.

Dixon, James R. Wheel cover lock. 4,161,869, Cl. 70-166.000.

Dobrovolsky, Anatoly A.: *See*—
Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.

Doby, William P., to Westinghouse Electric Corp. Tape recorder having magnetically controlled tape tensioning. 4,162,051, Cl. 242-201.000.

Dr. Madaus & Co.: *See*—
Madaus, Rolf; and Gorler, Klaus, 4,162,255, Cl. 260-340.50R.

Dolejsi, Miroslav, to Atlas Copco Aktiebolag. Exhaust muffler. 4,161,996, Cl. 181-230.000.

Doll, Gunther: *See*—
Zillgitt, Ulrich; Kuhn, Wolfgang; and Doll, Gunther, 4,162,424, Cl. 315-82.000.

Dombalov, Ivan P.: *See*—
Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.

Donn Products, Inc.: *See*—
Brown, Donald A.; and LaLonde, Paul D., 4,161,856, Cl. 52-667.000.

Dorcas, Eugene E.: *See*—
Howard, Warren L.; and Dorcas, Eugene E., 4,162,027, Cl. 222-23.000.

Dorn, Wilhelmus M.: *See*—
van Hattum, Johannes S. A.; van Veen, Engelbertus S. P.; and Dorn, Wilhelmus M., 4,162,433, Cl. 315-411.000.

Doss, James D.; Cowan, Robert E.; Newell, Robert H.; and McCabe, Charles W., to United States of America, Energy. Electrosurgical knife. 4,161,950, Cl. 128-303.140.

Dow Chemical Company, The: *See*—
Bertram, James L., 4,162,244, Cl. 260-37.0EP.
Fournier, Onazip J.; and Nelson, Wayne F., 4,161,985, Cl. 166-321.000.
Katzer, Melvin F.; Klimpel, Richard R.; and Manfroy, Willy, 4,162,045, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., 4,162,044, Cl. 241-16.000.
Montgomery, Carl T., 4,162,347, Cl. 428-411.000.
Smith, Russell D.; and Bushong, R. James, 4,162,168, Cl. 106-58.000.

Dow Corning Corporation: *See*—
Collins, Warde T.; and Fey, Mary D., 4,162,245, Cl. 260-40.00R.
Lee, Chi-Long; Maxson, Myron T.; and Stebleton, Leo F., 4,162,243, Cl. 260-37.0SB.

Dowa Co. Ltd.: *See*—
Miyahara, Kingo, 4,161,908, Cl. 99-349.000.

Downen, David N.; and Eichenberger, Bert A., to Rockwell International Corporation. Reactive sheets. 4,162,496, Cl. 343-18.00A.

Drapeau, Donald F.: *See*—
Frano, Paul A.; Bowman, Robert W.; Drapeau, Donald F.; and Kain, Marino, 4,161,816, Cl. 29-628.000.

Drayton Controls (Engineering) Limited: *See*—
Turner, Roy C.; and Constable, Philip J., 4,162,472, Cl. 338-116.000.

Dresser Industries, Inc.: *See*—
Bissell, Robert D., 4,161,888, Cl. 73-740.000.
Utasi, Joseph G., 4,162,473, Cl. 340-1.00L.

Dubiel, Oswald; and Pretzel, Dieter, to LuK Lammen und Kupplungsbau GmbH. Friction clutch. 4,162,002, Cl. 192-99.00A.

Dueber, Thomas E., to Du Pont de Nemours, E. I., and Company. Derivatives of aryl ketones and p-dialkyl-aminoaryhaldehydes as visible sensitizers of photopolymerizable compositions. 4,162,162, Cl. 96-115.00P.

Dunn, George T.; and Choiniere, Alcide W., to Automation Industries, Inc. Current carrying hose assembly. 4,162,370, Cl. 174-47.000.

Dunn, William H., to Singer Company, The. Rollover and wipe projective circuit for an electrical switching array. 4,161,918, Cl. 112-158.00E.

Dunne, Carroll J., Jr., to Chrysler Corporation. Composite tangential and axial exhaust fluid flowmeter. 4,161,879, Cl. 73-229.000.

Du Pont de Nemours, E. I., and Company: *See*—
Bergna, Horacio E., 4,162,238, Cl. 260-29.60S.
Brown, Alvin E., 4,162,111, Cl. 310-326.000.
Dueber, Thomas E., 4,162,162, Cl. 96-115.00P.
Moulds, Gordon M., 4,162,275, Cl. 525-428.000.

Durr, Louis; and Legrand, Francis, to Societe des Produits Chimiques et Matieres Colorantes de Mulhouse. Synthetic musk-based composition, its production and applications. 4,162,221, Cl. 252-1.000.

DuVall, Dale R., to Recognition Equipment Incorporated. Adaptive correlator for video processing. 4,162,481, Cl. 340-146.3AG.

Dydyk, Michael; and Tuzzolino, Joseph R., to Motorola, Inc. TM coaxial cavity oscillator and power combiner. 4,162,458, Cl. 331-56.000.

Dynamit Nobel AG: *See*—
Stelzer, Harry, 4,161,854, Cl. 52-309.100.

E. B. Metal & Rubber Industries, Inc.: *See*—
Jacobs, Philip F.; Friedman, Evelyn; and Southall, Peter, 4,162,026, Cl. 221-92.000.

Eastern Company, The: *See*—
Clark, Carl A.; and Rogala, John, 4,162,133, Cl. 405-258.000.

Eastman Kodak Company: *See*—
Irick, Gether, Jr.; and Kelly, Charles A., 4,162,254, Cl. 260-307.00D.

Eblen, Ewald; and Hofmann, Karl, to Robert Bosch GmbH. Fuel injection nozzle. 4,162,043, Cl. 239-533.300.

Eckert, Konrad; Holzbaur, Siegfried; Wessel, Wolf; and Grieshaber, Hermann, to Robert Bosch GmbH. Fuel injection system for an internal combustion engine. 4,161,935, Cl. 123-139.0AW.

Economopoulos, Mario; Respen, Yves J.; and Wilmotte, Stephane H., to Centre de Recherches Metallurgiques-Centrum voor Research in de Metallurgie. Apparatus for improving the quality of steel sections. 4,161,800, Cl. 15-302.000.

Ecsery, Zoltan: *See*—
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.

Eden, Richard C.; and Nakano, Kenichi, to United States of America, Air Force. Method of making a narrow-band inverted homoheterojunction avalanche photodiode. 4,162,203, Cl. 204-38.00R.

Eguchi, Seiji: *See*—
Suzuki, Seigo; and Eguchi, Seiji, 4,162,529, Cl. 364-200.000.

Ehrenfreund, Josef, to Ciba-Geigy Corporation. Acylurea insecticides. 4,162,330, Cl. 424-322.000.

Ehrenkaufer, Richard L. E.; Wolf, Alfred P.; and Hembree, Wylie C., to United States of America, Energy. Tritium labeling of organic compounds deposited on porous structures. 4,162,142, Cl. 260-326.200.

Eichenberger, Bert A.: *See*—
Downen, David N.; and Eichenberger, Bert A., 4,162,496, Cl. 343-18.00A.

Ekwall, Carl G. B.: *See*—
Forsberg, Bo E.; and Ekwall, Carl G. B., 4,161,990, Cl. 173-105.000.

Elam, Richard C.; and Ulion, Nicholas E., to United Technologies Corporation. Fabrication of Co-Cr-Al-Y feed stock. 4,162,349, Cl. 428-614.000.

Elder, Robert K.: *See*—
Riha, Jerry, 4,161,824, Cl. 33-180.0AT.

Eldon Industries, Inc.: *See*—
Bobrick, Mitchell, 4,162,014, Cl. 211-50.000.

Electric Power Research Institute, Inc.: *See*—
Putt, Ronald A.; and Montgomery, Mark J., 4,162,351, Cl. 429-15.000.

Electromedics, Inc.: *See*—
Prosky, Howard S., 4,161,880, Cl. 73-342.000.

Elkem-Spigerverket A/S: *See*—
Dahl, Erik Q., 4,162,284, Cl. 264-66.000.

Eller, Horst: *See*—
Gomez, Carlos R.; and Eller, Horst, 4,162,289, Cl. 422-170.000.

Ellgen, Paul C.; and Bhasin, Madan M., to Union Carbide Corporation. Process for producing two-carbon atom compounds from synthesis gas with minimal production of methanol. 4,162,262, Cl. 260-449.00R.

Ellis, Daniel A., to Mueller Co. Resilient seated gate valve with improved seat arrangement. 4,162,058, Cl. 251-326.000.

Ellis, Robert J.: *See*—
Calvin, Natasha I.; and Ellis, Robert J., 4,162,308, Cl. 424-195.000.
Calvin, Natasha I.; and Ellis, Robert J., 4,162,309, Cl. 424-195.000.

Elmore, Lester C.: *See*—
Groen, William; and Elmore, Lester C., 4,161,904, Cl. 89-7.000.

Elms, Robert T., to Westinghouse Electric Corp. Variable inductance ballast apparatus for HID lamp. 4,162,428, Cl. 315-284.000.

Elms, Robert T.; and Engel, Joseph C., to Westinghouse Electric Corp. Ballast circuit for accurately regulating HID lamp wattage. 4,162,429, Cl. 315-284.000.

Elms, Robert T.: *See*—
Cadoff, Laurence H.; Mattox, Douglas M.; and Elms, Robert T., 4,162,430, Cl. 315-309.000.

Emergency Products Corporation: *See*—
Silverman, Howard M.; Barleen, David G.; and DeLalla, Thomas R., 4,162,488, Cl. 340-505.000.

Endoh, Kenjiro; Kitagawa, Kazuo; and Kira, Hideshi, to Tokyo Shibaura Electric Co., Ltd. Noise reduction system. 4,162,462, Cl. 333-14.000.

Engel, John F., to FMC Corporation. α-trifluoromethyl-3-phenoxybenzyl alcohol. 4,162,366, Cl. 568-637.000.

Engel, Joseph C.: *See*—
Elms, Robert T.; and Engel, Joseph C., 4,162,429, Cl. 315-284.000.

English, Joseph J., to Kuntz, Earl J., a part interest. Removing organic components from an aqueous cleaning solution. 4,162,199, Cl. 203-39.000.

Enomoto, Hiroshi: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.

Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, to Ibigawa Electric Industry Co., Ltd. Process and an apparatus for producing silicon carbide consisting mainly of beta-type crystal. 4,162,167, Cl. 106-44.000.

Entenman, Alan W., to Intech Laboratories, Inc. Bilateral master station-plural satellite station signalling apparatus. 4,162,483, Cl. 340-147.00R.

Epp, Herbert N., to Hughes Aircraft Company. Power system having an inductive charge effect limiting inverter. 4,162,525, Cl. 363-71.000.

ERCO Industries Limited: *See*—
Brazier, Ernest R., 4,162,368, Cl. 13-18.00C.

Esch, Howard L.: *See*—
Gottsegen, Marten; and Esch, Howard L., 4,162,029, Cl. 222-131.000.

Eschenbach, Ralph F.: *See*—
Rode, France; Lindes, Peter; Eschenbach, Ralph F.; and Fazarinc, Zvonko A., 4,162,531, Cl. 364-571.000.

Eshelman, Robert W.; and Crall, Frederick W., to Chrysler Corporation. Pressure transducer and method. 4,161,886, Cl. 73-722.000.

Estes, Allen C. Magnetic tape splicer. 4,162,183, Cl. 156-505.000.

Everitt, Delmar K.: *See*—
Goldfarb, Adolph E.; and Everitt, Delmar K., 4,162,069, Cl. 273-1.00R.

Extranuclear Laboratories, Inc.: *See*—
Fite, Wade L.; Myers, Richard L.; and Brackmann, Richard T., 4,162,404, Cl. 250-423.00R.

Exxon Research & Engineering Co.: *See*—
Canter, Nathan H.; and Thame, Neville G., 4,162,241, Cl. 260-30.80R.
Kramer, George M., 4,162,233, Cl. 252-429.00R.

F. lli Marzoli & C. S.p.A.: *See*—
Marzoli, Angelo, 4,161,863, Cl. 57-124.000.

Facchini, Enio; and Swanson, Carl I., to Walter Kidde and Company, Inc. Fire protection apparatus. 4,162,485, Cl. 340-289.000.

Faccini, Ernest C. Auxiliary evaporator for dual mode heat pipes. 4,162,394, Cl. 219-341.000.

Facl S.A.: *See*—
Schalch, Fred, 4,162,382, Cl. 219-64.000.

Faltermeier, Heinz J. Dust cover for flip top opening containers. 4,162,023, Cl. 220-258.000.

Fanning, Bryce L., to Canada, Her Majesty the Queen in right of, as represented by the Minister of National Defence. Acceleration balanced hydrophone II. 4,162,476, Cl. 340-10.000.

Fansteel Inc.: *See*—
Witter, Gerald J., 4,162,160, Cl. 75-246.000.

Farrar, Frederick G.: *See*—
Jones, Howard S., Jr.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,162,499, Cl. 343-700.0MS.

Faure, Louis H.: *See*—
Bernardo, Edward T.; Faure, Louis H.; Johnson, Alfred H.; and Pittwood, Donald G., 4,161,817, Cl. 29-630.00B.

Fazarinc, Zvonko A.: *See*—
Rode, France; Lindes, Peter; Eschenbach, Ralph F.; and Fazarinc, Zvonko A., 4,162,531, Cl. 364-571.000.

Fearing, Ralph B.: *See*—
Walsh, Edward N.; and Fearing, Ralph B., 4,162,279, Cl. 260-943.000.

Feierstein, Harold E.; and Davis, Mark E., to Monsanto Company. Detergent compositions containing mixtures of alkylbenzene sulfonates as the detergent active. 4,162,236, Cl. 252-558.000.

Feldkamper, Richard: *See*—
Achelpohl, Fritz; Tetenborg, Konrad; and Feldkamper, Richard, 4,162,025, Cl. 221-72.000.

Feldman, Sidney; and Barton, George G., Jr., to United States of America, Navy. Passive optical rangefinder-sextant. 4,162,124, Cl. 356-4.000.

Fey, Mary D.: *See*—
Collins, Warde T.; and Fey, Mary D., 4,162,245, Cl. 260-40.00R.

Fey, Maurice G.: *See*—
Arcella, Frank G.; Wolf, Charles B.; and Fey, Maurice G., 4,162,291, Cl. 422-198.000.

Fieder, Martin: *See*—
Weiss, Kenneth; and Fieder, Martin, 4,161,853, Cl. 52-288.000.

Fildes, Roger D.: *See*—
Hunsinger, Bill J.; and Fildes, Roger D., 4,162,466, Cl. 333-194.000.

Filterwerk Mann & Hummel GmbH: *See*—
Bendig, Lothar; and Fusser, Rolf, 4,161,930, Cl. 123-122.00D.

Firestone Tire & Rubber Co., The: *See*—
Pearson, Dale S.; and Shurpik, Anton, 4,162,354, Cl. 525-3.000.

Fischer, Karl: *See*—
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, 4,162,200, Cl. 203-58.000.

Fischer, Konrad, to Licentia Patent-Verwaltungs G.m.b.H. Contact structure for a multiple semiconductor component. 4,162,507, Cl. 357-68.000.

Fish, Barry M; and Ward, Alfred G. Golf tee. 4,162,071, Cl. 273-33.000.

Fish-N-Mate Ltd.: *See*—
Fogg, Francis, 4,161,922, Cl. 114-297.000.

Fisher, Charles B.: *See*—
Fisher, Sidney T.; and Fisher, Charles B., 4,162,475, Cl. 340-8.00R.

Fisher, Chester G., III: *See*—
Sebens, Carl R.; and Fisher, Chester G., IiI, 4,162,379, Cl. 219-497.000.

Fisher, Sidney T.; and Fisher, Charles B. Transducer utilizing sampling. 4,162,475, Cl. 340-8.00R.

Fisher, William B.; and Van Peppen, Jan F., to Allied Chemical Corporation. Production of cyclohexanone. 4,162,267, Cl. 260-586.00P.

Fisons Limited: *See*—
Gates, Peter S.; and Baldwin, Derek, 4,162,154, Cl. 71-88.000.

Fite, Wade L.; Myers, Richard L.; and Brackmann, Richard T., to Extranuclear Laboratories, Inc. Method and apparatus for surface ionization monitor for particulates. 4,162,404, Cl. 250-423.00R.

Flavin, Thomas R.: *See*—
McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,162,066, Cl. 270-54.000.

Fletchall, Cleo L. Portable winch. 4,162,059, Cl. 254-187.400.

FMC Corporation: *See*—
Engel, John F., 4,162,366, Cl. 568-637.000.

Fogg, Francis, to Fish-N-Mate Ltd. Anchor caddy. 4,161,922, Cl. 114-297.000.

Folsom, Max H.; and Dickman, Michael D., to National Appliance Company. Adaptor collar. 4,162,196, Cl. 435-313.000.

Ford Aerospace & Communications Corp.: *See*—
Moreno, Isabel L., 4,162,120, Cl. 350-253.000.

Ford Motor Company: *See*—
DeAngelis, Larry E., 4,162,419, Cl. 310-266.000.
Giardini, Dante S.; and Hamburg, Douglas R., 4,161,931, Cl. 123-122.00E.

Fornaciari, Bert F. Smoking apparatus. 4,161,954, Cl. 131-173.000.

Forsberg, Bo E.; and Ekwall, Carl G. B., to Atlas Copco Aktiebolag. Rock drilling apparatus. 4,161,990, Cl. 173-105.000.

Fournier, Onazip J.; and Nelson, Wayne F., to Dow Chemical Company, The. Tool for removing fluids and loose material from an earth formation. 4,161,985, Cl. 166-321.000.

Fox, William M. Closurer and method for sealing a floating tank roof. 4,162,022, Cl. 220-224.000.

Franckowiak, Gerhard: *See*—
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.

Frank, Harry, to Asea Aktiebolag. Capacitor equipment. 4,162,442, Cl. 323-106.000.

Frank, Robert I.: *See*—
Kaplow, Roy; and Frank, Robert I., 4,162,174, Cl. 136-89.0PC.

Frano, Paul A.; Bowman, Robert W.; Drapeau, Donald F.; and Kain, Marino, to Hi-G, Incorporated. Method of making relay and RF adaptor assembly. 4,161,816, Cl. 29-628.000.

Fraser, Douglas S., to FTS Systems, Inc. Freeze drying container with manual stoppering. 4,161,857, Cl. 53-97.000.

Frederick, Louis S.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.

French, Richard W.: *See*—
Balduzzi, Richard R.; and French, Richard W., 4,162,036, Cl. 236-47.000.

Frick, Douglas G.: *See*—
Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., 4,162,295, Cl. 423-61.000.

Friedman, Evelyn: *See*—
Jacobs, Philip F.; Friedman, Evelyn; and Southall, Peter, 4,162,026, Cl. 221-92.000.

Frohberger, Paul-Ernst: *See*—
Kuhle, Engelbert; Klauke, Erich; and Frohberger, Paul-Ernst, 4,162,329, Cl. 424-319.000.

Frontier, Inc.: *See*—
Miranowski, Thomas D., 4,162,085, Cl. 280-412.000.

Fruehauf Corporation: *See*—
Schwartz, Robert B., 4,162,090, Cl. 280-688.000.

FTS Systems, Inc.: *See*—
Fraser, Douglas S., 4,161,857, Cl. 53-97.000.

Fu, Chien-Hung: *See*—
Fu, Fang-Cheng; and Fu, Chien-Hung, 4,162,490, Cl. 340-603.000.

Fu, Fang-Cheng; and Fu, Chien-Hung. Toilet training device. 4,162,490, Cl. 340-603.000.

Fuchs, Heinz, to Micafil AG. Method of manufacturing slot insulation for dynamo-electric machines from molded laminates and slot insulation produced by the method. 4,162,340, Cl. 428-83.000.

Fuji Photo Film Co., Ltd.: *See*—
Shimamura, Isao; and Nakamura, Yasuharu, 4,162,161, Cl. 96-59.000.

Fujii, Isao: *See—*
Yagi, Shizuo; Fujii, Isao; and Kogure, Hiroshi, 4,161,927, Cl. 123-75.00B.

Fujimoto, Kohichi: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Fujimoto, Kohichi, 4,162,268, Cl. 260-592.000.

Fujita, Toshihito: *See—*
Nakazawa, Koji; Kikuchi, Toshiaki; and Fujita, Toshihito, 4,161,897, Cl. 83-73.000.

Fujitsu Limited: *See—*
Ando, Hisashige, 4,162,540, Cl. 365-194.000.

Fukumura, Kagenori: *See—*
Ushijima, Fmihiro; and Fukumura, Kagenori, 4,161,895, Cl. 74-867.000.

Fulwyler, Mack J.; and Hatcher, C. William, to Coulter Electronics, Inc. Method for producing uniform particles. 4,162,282, Cl. 264-9.000.

Furstenberg, Joachim, to LTG Lufttechnische GmbH. Filtering apparatus. 4,162,148, Cl. 55-272.000.

Fussell, Theodore J., Jr., to Neptune Eastech, Inc. Pressure fluctuation flowmeter. 4,161,878, Cl. 73-194.0VS.

Fusser, Rolf: *See—*
Bendig, Lothar; and Fusser, Rolf, 4,161,930, Cl. 123-122.00D.

Futaba Denshi Kogyo K.K.: *See—*
Morimoto, Kiyoshi; and Harada, Akira, 4,162,422, Cl. 313-496.000.

GAF Corporation: *See—*
Brown, Michael J., 4,162,312, Cl. 424-211.000.
Brown, Michael J., 4,162,313, Cl. 424-217.000.

Ganter, Wolfgang, to Gebruder Junghans GmbH. Electronic watch, particularly a quartz-controlled wristwatch. 4,161,864, Cl. 58-23.00R.

Gantz, Jeanne A.; and Kelso, David W. Optical image multiplying device. 4,162,117, Cl. 350-4.200.

Ganz Brothers, Inc.: *See—*
Ganz, Robert H., 4,161,907, Cl. 93-51.100.

Ganz, Robert H., to Ganz Brothers, Inc. Carton forming machine. 4,161,907, Cl. 93-51.100.

Gapen, Daniel D. Fishing implement. 4,161,838, Cl. 43-42.110.

Gardella, Cameron G., to Torrington Company, The. Sealed thrust bearing with resilient seal having a metal portion. 4,162,110, Cl. 308-234.000.

Gardena Kress and Kastner GmbH: *See—*
Kress, Werner; Katzer, Johann; Lopic, Franz; and Hepperle, Willi, 4,162,132, Cl. 403-361.000.

Garlinger, Douglas W. Video periodicity indicator. 4,162,512, Cl. 358-139.000.

Garrison, Warren M., Jr.: *See—*
Parker, Earl R.; Zackay, Victor F.; Bhat, Manjeshwar S.; and Garrison, Warren M., Jr., 4,162,157, Cl. 75-124.000.

Gass, Albert E.; Gottshall, Harry W.; Schaber, Manfred O.; and Trombino, Lawrence, to International Business Machines Corporation. Failsafe primary power control apparatus for systems using computer controlled power sequencing. 4,162,526, Cl. 364-200.000.

Gassmann, Heiner: *See—*
Zabler, Erich; Gassmann, Heiner; Schneider, Steffen; and Straub, Steffen, 4,162,083, Cl. 280-703.000.

Gates, Peter S.; and Baldwin, Derek, to Fisons Limited. Herbicidally-active sulphonates. 4,162,154, Cl. 71-88.000.

Gebruder Junghans GmbH: *See—*
Ganter, Wolfgang, 4,161,864, Cl. 58-23.00R.

General Atomic Company: *See—*
Arya, Satya P., 4,162,018, Cl. 414-786.000.

General Electric Company: *See—*
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,162,173, Cl. 134-2.000.
Carson, Andrew B., Jr.; and Tuso, Michael J., 4,162,131, Cl. 400-124.000.
Grenoble, Maurice E., 4,162,356, Cl. 528-31.000.
Litch, Ernest W., III, 4,161,812, Cl. 29-446.000.
Mulvey, Robert F.; and Crepeau, Charles E., 4,161,855, Cl. 52-612.000.
Wright, Floyd H., 4,162,435, Cl. 318-138.000.

General Foods Corporation: *See—*
Sienkiewicz, Boleslaw; Meyer, William J.; and Giacone, Joseph, 4,162,332, Cl. 426-249.000.

General Signal Corporation: *See—*
Calzetta, Robert K., 4,162,035, Cl. 235-456.000.

Gentil, Patrick R., to Calider. Device for identifying ingots or castings. 4,161,830, Cl. 40-2.200.

Georg, Werner; Heberling, Walter; and Borgschulte, Fritz, to Gewerkschaft Eisenhutte Westfalia. Drive arrangements for mining machines. 4,162,103, Cl. 299-43.000.

George, Allen P.; Homer, Harold; and Richardson, Christopher J., to Tioxide Group Limited. Method and apparatus for controlling the erosion of arc producing electrodes 4,162,431, Cl. 315-346.000.

Georges, Barbara. Device for tennis instruction. 4,162,070, Cl. 273-29.00A.

Gerasimovich, Igor K.: *See—*
Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.

Gericke, Rolf: *See—*
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.

Gerrits, Theodorus P. H., to Brouwer Turf Equipment Limited. Gang mower. 4,161,858, Cl. 56-7.000.

Gerry, Martin E. Igniter with magnetic activation. 4,161,937, Cl. 123-169.0EL.

Gesellschaft zur Forderung der Forschung an der Eidgenossischen Technischen Hochschule: *See—*
Loewenschuss, Hana, 4,162,229, Cl. 252-301.10W.

Gewerkschaft Eisenhutte Westfalia: *See—*
Georg, Werner; Heberling, Walter; and Borgschulte, Fritz, 4,162,103, Cl. 299-43.000.

Giacone, Joseph: *See—*
Sienkiewicz, Boleslaw; Meyer, William J.; and Giacone, Joseph, 4,162,332, Cl. 426-249.000.

Giacosa, Dante, to Sira Societa' Industriale Ricerche Automotoristiche. Automatic transmission device, with belt transmission ratio variator, particularly for motor vehicles. 4,161,894, Cl. 74-863.000.

Giardini, Dante S.; and Hamburg, Douglas R., to Ford Motor Company. Vapor temperature controlled exhaust gas heat exchanger. 4,161,931, Cl. 123-122.00E.

Gieschen, Kurt; and Schmedemann, Walter, to U.S. Philips Corporation. X-ray apparatus comprising an intermittently displaceable film holder. 4,162,406, Cl. 250-468.000.

Gilmour, Margaret, successor: *See—*
Gilmour, William D., deceased, 4,162,448, Cl. 325-37.000.

Gilmour, William D., deceased (by Gilmour, Margaret, successor), to Lewis Security Systems Limited. Radio signalling systems. 4,162,448, Cl. 325-37.000.

Girard, Jean-Philippe; and Bernard, Antoine. Voice-switched telephone set. 4,162,374, Cl. 179-1.0HF.

Girling Limited: *See—*
Brearley, Malcolm; and Banks, Roger J., 4,162,443, Cl. 324-78.00D.

Givaudan Corporation: *See—*
Helmlinger, Daniel; and Naegeli, Peter, 4,162,266, Cl. 260-586.00F.

Glaxo Laboratories Limited: *See—*
Bradshaw, Janice; Cook, Martin C.; and Gregory, Gordon I., 4,162,360, Cl. 544-16.000.

Gleason, John G.: *See—*
Buckley, Thomas F.; and Gleason, John G., 4,162,250, Cl. 260-239.00A.

Glock, Eugene, to American Brands, Inc. Method of puffing tobacco tissue. 4,161,953, Cl. 131-140.00P.

Gochis, George G., to Avco Corporation. Inductive position sensor with minimum output signal level capacitively coupled to indicate failure of device. 4,162,491, Cl. 340-646.000.

Goegelman, Robert T.: *See—*
Cassidy, Patrick J.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, 4,162,324, Cl. 424-274.000.

Gokhman, Boris K.: *See—*
Maslyansky, Gdal N.; Rabinovich, Georgy L.; Treiger, Leonid M.; Gokhman, Boris K.; and Seleznev, Viktor D., 4,162,214, Cl. 585-471.000.

Golch, Peter R. B., to Spirax Sarco Limited. Temperature-dependent actuating mechanisms. 4,161,882, Cl. 73-368.300.

Goldfarb, Adolph E.; and Everitt, Delmar K., to Goldfarb, Adolph E. Action skill game. 4,162,069, Cl. 273-1.00R.

Goloff, Alexander; and Denning, Ralph E., to Caterpillar Tractor Co. Friction drive contact zone. 4,161,890, Cl. 74-214.000.

Gomez, Carlos R.; and Eller, Horst, to Internacional de Ciencia y Tecnologia, S.A. Filter unit for avoiding environmental pollution in cemeteries. 4,162,289, Cl. 422-170.000.

Gonda, Shunichi, to Agency of Industrial Science & Technology. Optical circuit element. 4,162,460, Cl. 331-94.50H.

Goodman, David S., to International Telephone and Telegraph Corporation. Fiber optic position indicator. 4,162,119, Cl. 350-96.210.

Goodyear Tire & Rubber Company, The: *See—*
Wideman, Lawson G., 4,162,271, Cl. 585-274.000.

Gorin, Alexandr F.: *See—*
Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., 4,162,107, Cl. 303-3.000.

Gorler, Klaus: *See—*
Madaus, Rolf; and Gorler, Klaus, 4,162,255, Cl. 260-340.50R.

Gottfried, Werner: *See—*
Muller, Wolfgang; Witzke, Lothar; and Gottfried, Werner, 4,162,296, Cl. 423-139.000.

Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, to Merck Patent Gesellschaft mit beschrankter Haftung. 7[2(Substituted phenyl)2-(amino)acetamido]cephalosporin derivatives. 4,162,314, Cl. 424-246.000.

Gottsegen, Marten; and Esch, Howard L. Cooler chest/liquid dispenser combination. 4,162,029, Cl. 222-131.000.

Gottshall, Harry W.: *See—*
Gass, Albert E.; Gottshall, Harry W.; Schaber, Manfred O.; and Trombino, Lawrence, 4,162,526, Cl. 364-200.000.

Gotz, Bernhard: *See—*
Abels, Theodor; and Gotz, Bernhard, 4,161,992, Cl. 180-306.000.

Gould Inc., Modicon Div.: *See—*
Morley, Richard E., 4,162,536, Cl. 364-900.000.

Graco Inc.: *See—*
Mommsen, Gordon V.; Hemming, Dale R.; and Hudrlik, Richard E., 4,162,042, Cl. 239-526.000.

Grady, John K. X-ray tube having rotatable and reciprocable anode. 4,162,420, Cl. 313-60.000.

Gragson, James T.; and Williams, Ralph P., to Phillips Petroleum Company. Residue of hydrogenation product of branched aliphatic dinitriles as lubricant additive. 4,162,223, Cl. 252-33.200.
Graham, Kenneth A.: *See—*
Teague, Kenneth W.; and Graham, Kenneth A., 4,161,928, Cl. 123-102.000.
Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., to Vish Chimiko-Technologicheski Institute. Method of obtaining granulated and defluorated phosphogypsum. 4,162,170, Cl. 106-109.000.
Granzow, Albrecht H., to American Cyanamid Company. Flame retardant polyphenylene ether resin compositions containing a pentaerythrityl phosphonate. 4,162,278, Cl. 525-2.000.
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., to Standard Oil Company, The. Oxidation catalysts. 4,162,234, Cl. 252-432.000.
Gray, Bruce E.: *See—*
Keith, James D.; and Gray, Bruce E., 4,162,437, Cl. 318-410.000.
Green, Harry W.: *See—*
Dallen, John A.; and Green, Harry W., 4,161,792, Cl. 4-111.100.
Gregory, Gordon I.: *See—*
Bradshaw, Janice; Cook, Martin C.; and Gregory, Gordon I., 4,162,360, Cl. 544-16.000.
Greiner, Max; and Temmen, Bernhard, to Robert Bosch GmbH. Reservoir for fuel injection system. 4,161,964, Cl. 138-26.000.
Greiner, Max: *See—*
Knapp, Heinrich; Greiner, Max; Peters, Klaus-Jurgen; and Jaggle, Gunther, 4,161,961, Cl. 137-501.000.
Grenoble, Maurice E., to General Electric Company. Method and composition for rendering flexible sheet material non-adherent. 4,162,356, Cl. 528-31.000.
Grier, William R.: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,162,130, Cl. 400-4.000.
Grieshaber, Hermann: *See—*
Eckert, Konrad; Holzbaur, Siegfried; Wessel, Wolf; and Grieshaber, Hermann, 4,161,935, Cl. 123-139.0AW.
Grodinsky, Robert M. Expansion circuit for improved stereo and apparent monaural image. 4,162,457, Cl. 330-295.000.
Groen, William; and Elmore, Lester C., to Pulsepower Systems, Incorporated. Liquid propellant modular gun incorporating hydraulic pressurization of the case. 4,161,904, Cl. 89-7.000.
Gross, Ulrich, to U.S. Philips Corporation. Device for electronically generating the radiation effects produced by a rotary loudspeaker. 4,162,372, Cl. 179-1.00J.
Grossman, Hyman, to Cambridge Instrument Company, Inc. Selective interference filter. 4,161,945, Cl. 128-696.000.
Groves, David J.; and Mason, Albert, to Imperial Chemical Industries Limited. Casting of polymeric film. 4,162,139, Cl. 425-174.80E.
Grudzinski, Richard, to Universo S.A. Electromechanical escapement. 4,162,417, Cl. 310-21.000.
Grundig E.M.V. Elektro-Mechanische Versuschsanstalt: *See—*
Herrmann, Gunther, 4,162,217, Cl. 210-84.000.
GTE Laboratories Incorporated: *See—*
Buhrer, Carl F., 4,162,450, Cl. 325-419.000.
GTE Sylvania Incorporated: *See—*
DiTullio, Joseph G.; and Parad, Leonard I., 4,162,463, Cl. 333-117.000.
Yale, Ramon L., 4,162,232, Cl. 252-301.40F.
Gubelmann, Walter S., executor: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,162,130, Cl. 400-4.000.
Gubelmann, William S., deceased; by Gubelmann, Walter S., executor; and Grier, William R., to R & I Patent Corporation. Apparatus for performing deleting operations while backspacing in a composing machine. 4,162,130, Cl. 400-4.000.
Guillaumin, Jean-Claude, to Societe des Acieries de Paris et d'Outreau. Railway truck frames. 4,161,913, Cl. 105-200.000.
Gulyaev, Jury V.: *See—*
Andreev, Anatoly S.; Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,162,415, Cl. 310-313.000.
Gunnell, Thomas J.; and Hann, Paul D., to Phillips Petroleum Company. Wet pelleter having variable annulus between shell and shaft. 4,162,286, Cl. 264-117.000.
Gunnell, Thomas J.; and Hann, Paul D., to Phillips Petroleum Company. Apparatus for pelleting flocculent particles. 4,162,287, Cl. 264-117.000.
Haag, Gary L.: *See—*
Holladay, David W.; and Haag, Gary L., 4,162,298, Cl. 423-230.000.
Hachtmann, William R.: *See—*
Knight, Arlen M.; and Hachtmann, William R., 4,161,802, Cl. 15-331.000.
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Nakagawa, Yasuo; and Hamada, Toshimitsu, 4,162,126, Cl. 356-237.000.
Hamajima, Shigemitsu: *See—*
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,919, Cl. 112-275.000.
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Giardini, Dante S.; and Hamburg, Douglas R., 4,161,931, Cl. 123-122.00E.
Hamill Company, Inc.: *See—*
Kilbane, James C.; and Hamill, Samuel M., III, 4,162,527, Cl. 364-474.000.
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Hamling, Bernard H., to Union Carbide Corporation. Flexible microcrystalline zirconium carbide fabric. 4,162,301, Cl. 423-440.000.
Hammann, Ingeborg: *See—*
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Hanaya, Morimasa, to Toyo Pulp Co., Ltd. Apparatus for producing chips from logs of timber. 4,161,972, Cl. 144-176.000.
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Hunsinger, Bill J.; and Hanma, Kentaro, 4,162,465, Cl. 333-151.000.
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Gunnell, Thomas J.; and Hann, Paul D., 4,162,286, Cl. 264-117.000.
Gunnell, Thomas J.; and Hann, Paul D., 4,162,287, Cl. 264-117.000.
Hansen, Emmert S., to Bourns, Inc. Optical mark sense detector. 4,162,408, Cl. 250-555.000.
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Morimoto, Kiyoshi; and Harada, Akira, 4,162,422, Cl. 313-496.000.
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Mohnach, Michael G.; Harbison, William H.; and Wittwer, Robert O., 4,161,798, Cl. 15-250.130.
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Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,162,234, Cl. 252-432.000.
Hardy, Terence: *See—*
Litchfield, Leon G.; and Hardy, Terence, 4,162,114, Cl. 312-330.00R.
Harrison, Brian: *See—*
Acres, Gary J. K.; Cooper, Barry J.; and Harrison, Brian, 4,162,235, Cl. 252-462.000.
Harrison, Nathan E.: *See—*
Crow, David E.; and Harrison, Nathan E., 4,162,077, Cl. 277-53.000.
Hart, Ronald D. Portable earth core sampling machine. 4,161,988, Cl. 173-32.000.
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Hatcher, C. William: *See—*
Fulwyler, Mack J.; and Hatcher, C. William, 4,162,282, Cl. 264-9.000.
Hauslein, Reinhard, to Melitta-Werke Bentz & Sohn KG. Filtering device for producing extracts from coffee or tea. 4,162,054, Cl. 248-94.000.
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Anderson, Harry E.; Helsel, Kenneth E.; and Heasley, Raymond E., 4,162,060, Cl. 266-49.000.
Hebenstreit, Ernst, to Siemens Aktiengeselischaft. Read-out circuit for digital storage elements. 4,162,539, Cl. 365-149.000.
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Georg, Werner; Heberling, Walter; and Borgschulte, Fritz, 4,162,103, Cl. 299-43.000.
Hedberg, Frederick L.: *See—*
Arnold, Fred E.; Reinhardt, Bruce A.; and Hedberg, Frederick L., 4,162,265, Cl. 260-578.000.
Heider, Erich E., to Cutler-Hammer, Inc. Apparatus and method for submerged percussion welding. 4,162,388, Cl. 219-96.000.
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Wakeman, Alden H.; and Heiliger, Leonard R., 4,162,127, Cl. 366-149.000.
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Kinney, Philip C.; Heilman, Marlin S.; and Langer, Alois A., 4,161,952, Cl. 128-786.000.

Heine, Heinrich: *See*—
Kubens, Rolf; and Heine, Heinrich, 4,162,357, Cl. 528-67.000.
Heise, Arend: *See*—
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.
Helbling, Gerhard: *See*—
Bauer, Heinrich F.; Helbling, Gerhard; and Hildebrandt, Florian, 4,161,877, Cl. 73-140.000.
Helmlinger, Daniel; and Naegeli, Peter, to Givaudan Corporation. Trimethyl-acetyl octalins, process for making and fragrance compositions containing same. 4,162,266, Cl. 260-586.00F.
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Hembree, Wylie C.: *See*—
Ehrenkaufer, Richard L. E.; Wolf, Alfred P.; and Hembree, Wylie C., 4,162,142, Cl. 260-326.200.
Hemming, Dale R.: *See*—
Mommsen, Gordon V.; Hemming, Dale R.; and Hudrlik, Richard E., 4,162,042, Cl. 239-526.000.
Henderson, Gary A.; and Williams, Guy H., Jr., to American Home Products Corp. Electrical shocking device with audible and visible spark display. 4,162,515, Cl. 361-232.000.
Hendricks, Howard K., Jr. Theft proof modular sign. 4,161,834, Cl. 40-606.000.
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Stone, Vaughn L.; Rhind, Terence K.; Andrews, Allen H.; and Hendrie, John M., 4,161,887, Cl. 73-720.000.
Hennisse, Bonnie C.; and Cousins, Synde, to Bonnie Enterprises, Inc. Snap fastener. 4,161,806, Cl. 24-201.00A.
Hentschel, Claus; Martin, Karl; and Volckaert, Leonard, to Bayer Aktiengesellschaft. Hydroculture plant pot with an inserted container for receiving a hydroculture fertilizer. 4,161,844, Cl. 47-62.000.
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Kress, Werner; Katzer, Johann; Lopic, Franz; and Hepperle, Willi, 4,162,132, Cl. 403-361.000.
Hermann nee Voros, Judit: *See*—
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.
Hernandez, Sebastian: *See*—
Cassidy, Patrick J.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, 4,162,324, Cl. 424-274.000.
Herrmann, Gunther, to Grundig E.M.V. Elektro-Mechanische Versuchsanstalt. Method for separating impurities from a chemical metallizing bath. 4,162,217, Cl. 210-84.000.
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Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.
Rode, France; Lindes, Peter; Eschenbach, Ralph F.; and Fazarinc, Zvonko A., 4,162,531, Cl. 364-571.000.
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Frano, Paul A.; Bowman, Robert W.; Drapeau, Donald F.; and Kain, Marino, 4,161,816, Cl. 29-628.000.
Hida, Tsuneo: *See*—
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,919, Cl. 112-275.000.
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Specker, Lawrence J.; Higgins, Aubin M.; and Brinkley, James W., 4,161,874, Cl. 73-12.000.
Higo, Akio: *See*—
Mizutani, Masato; Higo, Akio; Ohno, Nobuo; and Hirai, Hajime, 4,162,269, Cl. 260-600.00R.
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Bauer, Heinrich F.; Helbling, Gerhard; and Hildebrandt, Florian, 4,161,877, Cl. 73-140.000.
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, to BASF Aktiengesellschaft. Preparation of pure dimethyl carbonate. 4,162,200, Cl. 203-58.000.
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Mizutani, Masato; Higo, Akio; Ohno, Nobuo; and Hirai, Hajime, 4,162,269, Cl. 260-600.00R.
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Shimdada, Wataru; Machida, Kazumichi; Hoshinouchi, Susumu; Hiramoto, Seigo; and Okada, Masaru, 4,162,389, Cl. 219-121.00P.
Hiraoka, Tetsuo; and Kobayashi, Takeo, to Sankyo Company Limited. Process for the preparation of β-lactam compounds. 4,162,251, Cl. 260-239.100.
Hirayama, Chikara; and Brecher, Lee E., to Westinghouse Electric Corp. Decomposition of water. 4,162,302, Cl. 423-579.000.
Hirschmann, Peter; and Hoefer, Ernst, to Siemens Aktiengesellschaft. Conference call circuit using reversible analog to digital converter. 4,162,376, Cl. 179-18.0BC.
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Nakagawa, Yasuo; and Hamada, Toshimitsu, 4,162,126, Cl. 356-237.000.
Hitachi Maxell, Ltd.: *See*—
Hashimoto, Noritsugu, 4,162,047, Cl. 242-68.500.
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Hodges, Bill J., deceased, 4,162,015, Cl. 211-87.000.
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Adrian, Renate; von Schenck, Raban; Somme, Klaus; and Weber, Hermann, 4,162,300, Cl. 423-314.000.
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,162,247, Cl. 260-45.9NC.
Hoefer, Ernst: *See*—
Hirschmann, Peter; and Hoefer, Ernst, 4,162,376, Cl. 179-18.0BC.
Hoffmann-La Roche Inc.: *See*—
Zurfluh, Rene, 4,162,328, Cl. 424-305.000.
Hofmann, Karl: *See*—
Eblen, Ewald; and Hofmann, Karl, 4,162,043, Cl. 239-533.300.
Hogan, Kevin P.: *See*—
Roberts, Patrick J.; Hogan, Kevin P.; and Kealy, Thomas, 4,161,827, Cl. 36-11.000.
Holladay, David W.; and Haag, Gary L., to United States of America, Energy. Method of immobilizing carbon dioxide from gas streams. 4,162,298, Cl. 423-230.000.
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Strachan, Robert G.; Paleveda, William J.; Veber, Daniel F.; and Holly, Frederick W., 4,162,248, Cl. 260-112.50S.
Holstein, Frederick W. Fishing device. 4,161,841, Cl. 43-43.130.
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Homer, Harold: *See*—
George, Allen P.; Homer, Harold; and Richardson, Christopher J., 4,162,431, Cl. 315-346.000.
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Maurer, Fritz; Hammann, Ingeborg; and Homeyer, Bernhard, 4,162,320, Cl. 424-251.000.
Honda Giken Kogyo Kabushiki Kaisha: *See*—
Sano, Shoichi, 4,162,091, Cl. 280-702.000.
Yagi, Shizuo; Fujii, Isao; and Kogure, Hiroshi, 4,161,927, Cl. 123-75.00B.
Honeywell Inc.: *See*—
Anderson, George A., 4,162,535, Cl. 364-900.000.
Severson, Asbjorn M., 4,161,809, Cl. 29-157.30D.
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Nakamura, Masato; Nomura, Yoshika; and Katori, Tamio, 4,162,188, Cl. 162-76.000.
Hood, John D.: *See*—
Box, Stephen J.; and Hood, John D., 4,162,304, Cl. 424-117.000.
Hopper, George S., to Texas Instruments Incorporated. Ferroelectric imaging system. 4,162,402, Cl. 250-332.000.
Horak, Anthony; Rachiatore, Felix A.; and Lada, Christopher O., to Burroughs Corporation. Air assisted automatic document stacking apparatus. 4,162,067, Cl. 271-177.000.
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Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,162,086, Cl. 280-425.00R.
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House, Ralph, to Chevron Research Company. Polyol stabilization additive for polypyrrolidone. 4,162,242, Cl. 260-30.80R.
Hovsepian, Charles J., to Packaging Systems Corporation. Cosmetic dusting powder container. 4,162,010, Cl. 206-823.000.
Howard, Guy J.; McCrumb, Walter C.; and Spivey, Paul R., to International Business Machines Corporation. Testing copy production machines. 4,162,396, Cl. 235-304.000.
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Young, David W., 4,162,155, Cl. 71-110.000.
Howard, Warren L.; and Dorcas, Eugene E., to Datacon, Inc. Remote readout device for a pump. 4,162,027, Cl. 222-23.000.

Hruza, Anne S.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.
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Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, to Bayerische Motoren Werke AG. Circuit arrangement for testing operating and/or capacity conditions in automotive vehicles. 4,162,478, Cl. 340-52.00F.
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Mommsen, Gordon V.; Hemming, Dale R.; and Hudrlik, Richard E., 4,162,042, Cl. 239-526.000.
Hudson, Charles L., to BEI Electronics, Inc. Optical encoder with fiber optics. 4,162,399, Cl. 250-231.0SE.
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Epp, Herbert N., 4,162,525, Cl. 363-71.000.
Hui, Danny C. T. Electrically powered toy aircraft. 4,161,843, Cl. 46-75.000.
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Hunkins, James: *See*—
Weck, Friedrich J.; Hunkins, James; and Rinsler, Samuel J., 4,162,339, Cl. 428-43.000.
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Beach, Richard L., 4,162,011, Cl. 209-637.000.
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Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,162,173, Cl. 134-2.000.
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Schouten, Peter, 4,162,009, Cl. 206-389.000.
Hwang, Sun-Keun; and Morris, John W., Jr., to United States of America, Energy. Ferritic Fe-Mn alloy for cryogenic applications. 4,162,158, Cl. 75-124.000.
Iannucci, Albert H. Board game involving electric utility plant operations and finance. 4,162,075, Cl. 273-256.000.
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Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, 4,162,167, Cl. 106-44.000.
ICI Americas Inc.: *See*—
Yount, Joseph B., III, 4,162,143, Cl. 44-51.000.
Imperial Chemical Industries Limited: *See*—
Burton, Arthur; and Conway, Roy, 4,162,180, Cl. 156-220.000.
Groves, David J.; and Mason, Albert, 4,162,139, Cl. 425-174.80E.
Yelland, Michael, 4,162,249, Cl. 260-199.000.
Inabe, Shinya: *See*—
Kawaki, Katsumi; and Inabe, Shinya, 4,162,418, Cl. 310-49.00R.
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Keith, James D.; and Gray, Bruce E., 4,162,437, Cl. 318-410.000.
Ingber, Jack F., to Systems Consultants, Inc. Flexible acoustic coupler. 4,162,373, Cl. 179-1.00C.
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Entenman, Alan W., 4,162,483, Cl. 340-147.00R.
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Gomez, Carlos R.; and Eller, Horst, 4,162,289, Cl. 422-170.000.
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Bernardo, Edward T.; Faure, Louis H.; Johnson, Alfred H.; and Pittwood, Donald G., 4,161,817, Cl. 29-630.00B.
Bothun, Maynard E.; Larson, Curtis A.; Lightner, Gayland E.; and Wilson, David R., 4,162,007, Cl. 206-444.000.
Coburn, John W.; and Winters, Harold F., 4,162,185, Cl. 156-643.000.
Gass, Albert E.; Gottshall, Harry W.; Schaber, Manfred O.; and Trombino, Lawrence, 4,162,526, Cl. 364-200.000.
Howard, Guy J.; McCrumb, Walter C.; and Spivey, Paul R., 4,162,396, Cl. 235-304.000.
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Sprecker, Mark A.; and Theimer, Ernst T., 4,162,256, Cl. 260-345.200.
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.
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Storm, Donald P.; and Ridge, George W., 4,161,859, Cl. 56-364.000.
Ward, Gerald G., 4,161,986, Cl. 172-266.000.
International Nickel Company, Inc., The: *See*—
Kelly, Thomas J., 4,162,390, Cl. 219-121.0LM.
International Telephone and Telegraph Corporation: *See*—
Goodman, David S., 4,162,119, Cl. 350-96.210.
Leithem, Phyllis C.; and Conca, Romeo, 4,162,359, Cl. 536-70.000.
Irick, Gether, Jr.; and Kelly, Charles A., to Eastman Kodak Company. Benzoxazole ultraviolet stabilizers. 4,162,254, Cl. 260-307.00D.
Irnich, Rudolf: *See*—
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, 4,162,200, Cl. 203-58.000.
Ironflex AG: *See*—
Schoellkopf, Ernst H., 4,161,957, Cl. 137-205.000.
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Mizuno, Kyosuke; Miyanohara, Atsushi; Ishihara, Yoshimitsu; and Ohtomo, Nobuya, 4,162,192, Cl. 435-239.000.
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Sakaue, Tatsuo; and Iwasawa, Mineo, 4,162,411, Cl. 307-221.00D.
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Capra, Nicholas G.; and Antenore, Ronald L., 4,162,030, Cl. 222-321.000.
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Zodrow, Rudolf, 4,162,181, Cl. 156-384.000.
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Knapp, Heinrich; Greiner, Max; Peters, Klaus-Jurgen; and Jaggle, Gunther, 4,161,961, Cl. 137-501.000.
James, Rex L.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.
Jansen, Hermann; and Schneider, Heinz, to Zimmermann & Jansen GmbH. High-temperature slide valve, especially hot-blast slide valve. 4,161,959, Cl. 137-340.000.
Jansson, Leonard E., to U.S. Philips Corporation. DC-DC converter. 4,162,524, Cl. 363-56.000.
Jelinek, Jerry G., to Parker-Hannifin Corporation. Resilient packing ring and assembly. 4,162,079, Cl. 277-205.000.
Jenko, Branko: *See*—
Zupancic, Boris; and Jenko, Branko, 4,162,364, Cl. 562-408.000.
Jerrold-Jones, Paul, to Beckman Instruments, Inc. Combination electrode assembly. 4,162,211, Cl. 204-195.00G.
Jet Spray Corp.: *See*—
Arzberger, William; and Brown, Merle S., 4,161,971, Cl. 141-362.000.
Jim Dandy Company, The: *See*—
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,162,336, Cl. 426-623.000.
Joa, Curt G. Apparatus for recovering filler from sanitary pads. 4,162,019, Cl. 414-412.000.
Jochmann, Franz: *See*—
Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, 4,162,478, Cl. 340-52.00F.
John Wyeth & Brother Limited: *See*—
Weston, George O., 4,162,252, Cl. 546-201.000.
John Zink Company: *See*—
Reed, Robert D., 4,162,140, Cl. 431-284.000.
Johnson, Alfred H.: *See*—
Bernardo, Edward T.; Faure, Louis H.; Johnson, Alfred H.; and Pittwood, Donald G., 4,161,817, Cl. 29-630.00B.
Johnson & Johnson: *See*—
Servas, Francis M., 4,162,220, Cl. 210-448.000.
Subelka, John C., 4,162,163, Cl. 106-1.130.
Johnson, Matthey & Co., Limited: *See*—
Acres, Gary J. K.; Cooper, Barry J.; and Harrison, Brian, 4,162,235, Cl. 252-462.000.
Johnston, Gerald M. Fishing hook bait mold. 4,161,837, Cl. 43-4.000.
Jones, George F., to Wheelabrator-Frye Inc. Vibratory finishing device. 4,161,848, Cl. 51-163.200.
Jones, Howard S., Jr.; Farrar, Frederick G.; and Schaubert, Daniel H., to United States of America, Army. Flush-mounted piggyback microstrip antenna. 4,162,499, Cl. 343-700.0MS.
Jones, Robert E., Jr., to AAI Corporation. Method and apparatus for image signal generation and image display. 4,162,492, Cl. 340-723.000.
Jones, Rufus S., Jr.; Tan, Marshall; and Choe, Eui W., to Celanese Corporation. High performance wholly aromatic polyamide fibers. 4,162,346, Cl. 428-364.000.
Josemans, Leonardus J.: *See*—
Bourgeois, James E.; and Josemans, Leonardus J., 4,162,386, Cl. 200-339.000.
Joseph, Claude. Safety release hand loop for ski pole. 4,162,081, Cl. 280-11.37H.

Jubb, Albert, to Rolls-Royce Limited. Fluidized bed combustion apparatus. 4,161,917, Cl. 110-263.000.

Juraszyk, Horst: *See*—
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.

Juridical Foundation: *See*—
Mizuno, Kyosuke; Miyanohara, Atsushi; Ishihara, Yoshimitsu; and Ohtomo, Nobuya, 4,162,192, Cl. 435-239.000.

Juzu, Shigeru; Okazaki, Hiroyuki; and Suzuki, Yasuyuki, to Sumitomo Chemical Company, Limited. Coloring of inorganic substrates and mineral materials. 4,162,348, Cl. 428-474.000.

Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See*—
Breitenbach, Otto, 4,162,464, Cl. 333-138.000.
Scheffler, Ernst; Schatz, Friedrich; and Ziemek, Gerhard, 4,161,966, Cl. 138-112.000.

Kabushiki Kaisha Kawaguchiya Hayashi Juho Kayaku-ten: *See*—
Hayashi, Hisao, 4,161,836, Cl. 42-16.000.

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Tsuda, Akihito, 4,162,176, Cl. 148-1.500.
Usui, Kiyofumi; and Kodaira, Kozo, 4,161,912, Cl. 101-99.000.

Kahan, Frederick M.: *See*—
Kahan, Jean S.; and Kahan, Frederick M., 4,162,193, Cl. 43-121.000.

Kahan, Jean S.; and Kahan, Frederick M., to Merck & Co., Inc. Enzymatic cleavage of N-acyl-thienamycins. 4,162,193, Cl. 43-121.000.

Kahan, Jean S., to Merck & Co., Inc. Antibiotic N-acetyl-dehydrothienamycin. 4,162,323, Cl. 424-274.000.

Kaibel, Gerd: *See*—
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, 4,162,200, Cl. 203-58.000.

Kain, Marino: *See*—
Frano, Paul A.; Bowman, Robert W.; Drapeau, Donald F.; and Kain, Marino, 4,161,816, Cl. 29-628.000.

Kamegaya, Takeo; Yokozawa, Minori; Kaneko, Ryuichi; and Matsuzaki, Hideomi, to Nippon Hoso Kyokai. Gas-discharge display panel. 4,162,427, Cl. 315-169.100.

Kamiyama, Shuichi, to Aisin Seiki Kabushiki Kaisha. Stirling cycle machine. 4,161,866, Cl. 60-517.000.

Kanchev, Kancho T.: *See*—
Nedyalkov, Ivan P.; Kanchev, Kancho T.; and Trenkov, Svetoslav R., 4,162,409, Cl. 290-53.000.

Kaneko, Ryuichi: *See*—
Kamegaya, Takeo; Yokozawa, Minori; Kaneko, Ryuichi; and Matsuzaki, Hideomi, 4,162,427, Cl. 315-169.100.

Kapfhammer, Karl: *See*—
Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, 4,162,478, Cl. 340-52.00F.

Kaplan, Leonard, to Union Carbide Corporation. Novel solvents for the catalytic process for making polyhydric alcohols. 4,162,261, Cl. 260-449.00L.

Kaplow, Roy; and Frank, Robert I., to Massachusetts Institute of Technology. Solar cell array. 4,162,174, Cl. 136-89.0PC.

Karrasch, Richard J.: *See*—
Brown, Arthur V., Jr.; and Karrasch, Richard J., 4,162,336, Cl. 426-623.000.

Karsner, Grant G.: *See*—
Zrinscak, Fred S., Sr.; and Karsner, Grant G., 4,162,213, Cl. 208-89.000.

Katori, Tamio: *See*—
Nakamura, Masato; Nomura, Yoshika; and Katori, Tamio, 4,162,188, Cl. 162-76.000.

Katzer, Johann: *See*—
Kress, Werner; Katzer, Johann; Lopic, Franz; and Hepperle, Willi, 4,162,132, Cl. 403-361.000.

Katzer, Melvin F.; Klimpel, Richard R.; and Manfroy, Willy, to Dow Chemical Company, The. Ore grinding process. 4,162,045, Cl. 241-16.000.

Kauderer, Albert. Cement for wall and floor coverings and the like. 4,162,237, Cl. 260-17.00R.

Kawai, Taneichi: *See*—
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,919, Cl. 112-275.000.
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Kawaki, Katsumi; and Inabe, Shinya, to Niles Parts Co., Ltd. Stepping motor for electronic clock. 4,162,418, Cl. 310-49.00R.

Kawamoto, Isao: *See*—
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,162,305, Cl. 424-120.000.

Kayanuma, Kanji, to Victor Company of Japan, Limited. Bias control circuit for light modulators. 4,162,398, Cl. 250-205.000.

Kazda, Stanislav: *See*—
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.

Kealy, Thomas: *See*—
Roberts, Patrick J.; Hogan, Kevin P.; and Kealy, Thomas, 4,161,827, Cl. 36-11.000.

Keith, James D.; and Gray, Bruce E., to Incom International. Motor acceleration and starting torque control. 4,162,437, Cl. 318-410.000.

Keizer, Eugene O., to RCA Corporation. Keel-tipped stylus for video disc systems. 4,162,510, Cl. 358-128.000.

Kelly, Charles A.: *See*—
Irick, Gether, Jr.; and Kelly, Charles A., 4,162,254, Cl. 260-307.00D.

Kelly, Harlan J.: *See*—
Nissen, George P.; and Kelly, Harlan J., 4,162,063, Cl. 267-73.000.

Kelly, Thomas J., to International Nickel Company, Inc., The. Laser welding chamber. 4,162,390, Cl. 219-121.0LM.

Kelso, David W.: *See*—
Gantz, Jeanne A.; and Kelso, David W., 4,162,117, Cl. 350-4.200.

Kennedy, Thomas E.; and Thompson, Thomas H., to Tyler Refrigeration Corp. Refrigerator with front access means. 4,161,868, Cl. 62-256.000.

Kersting, Emil F.: *See*—
Sack, Ernst T.; Nordmeyer, Friedrich; and Kersting, Emil F., 4,161,885, Cl. 73-597.000.

Kidd, David. Fish hook. 4,161,840, Cl. 43-43.400.

Kikuchi, Toshiaki: *See*—
Nakazawa, Koji; Kikuchi, Toshiaki; and Fujita, Toshihito, 4,161,897, Cl. 83-73.000.

Kilbane, James C.; and Hamill, Samuel M., III, to Hamill Company, Inc. Numerically controlled machine tool system with programmable tool offset. 4,162,527, Cl. 364-474.000.

King, Charles L. Internal combustion engine with improved intake valve control system. 4,161,938, Cl. 123-198.00F.

King, James P., to United States of America, Air Force. Grease compositions. 4,162,222, Cl. 252-32.70E.

King, Wayne E.; and Merkle, Karl L., to United States of America, Energy. High-resolution, cryogenic, side-entry type specimen stage. 4,162,401, Cl. 250-311.000.

Kinney, Philip C.; Heilman, Marlin S.; and Langer, Alois A., to Mirowski, Mieczyslaw. Wound wire catheter cardioverting electrode. 4,161,952, Cl. 128-786.000.

Kinsman, Gordon F.: *See*—
Land, Edwin H.; and Kinsman, Gordon F., 4,161,815, Cl. 29-623.400.

Kira, Hideshi: *See*—
Endoh, Kenjiro; Kitagawa, Kazuo; and Kira, Hideshi, 4,162,462, Cl. 333-14.000.

Kirjavainen, Alvi, to Valmet Oy. Paper machine having a headbox provided with an air tank. 4,162,189, Cl. 162-337.000.

Kirkland, Edward O., to Smith, Donald K. Anti-spill device. 4,162,020, Cl. 220-1.00B.

Kirsch, Howard C.: *See*—
Beecham, David; and Kirsch, Howard C., 4,162,416, Cl. 307-362.000.

Kispert, Klaus: *See*—
Muennich, Hermann; and Kispert, Klaus, 4,162,109, Cl. 308-216.000.

Kitagawa, Kazuo: *See*—
Endoh, Kenjiro; Kitagawa, Kazuo; and Kira, Hideshi, 4,162,462, Cl. 333-14.000.
Kusui, Shoji; and Kitagawa, Kazuo, 4,162,530, Cl. 364-464.000.

Kitagawa, Keiya: *See*—
Takeyama, Tetsu; Takahashi, Akio; Matsumura, Kiichiro; and Kitagawa, Keiya, 4,162,299, Cl. 423-242.000.

Kitagawa, Toshikatsu, to Miyakawa Industry Company Limited. Apparatus for adjusting vertical position of drills in multiple spindle drilling machine. 4,162,134, Cl. 408-46.000.

Klauke, Erich: *See*—
Kuhle, Engelbert; Klauke, Erich; and Frohberger, Paul-Ernst, 4,162,329, Cl. 424-319.000.

Klein, Konrad: *See*—
Hartmannsgruber, Max; Schulz, Gunter; Klein, Konrad; and Wolf, Horst, 4,161,862, Cl. 57-92.000.

Klimpel, Richard R.: *See*—
Katzer, Melvin F.; Klimpel, Richard R.; and Manfroy, Willy, 4,162,045, Cl. 241-16.000.
Manfroy, Willy; and Klimpel, Richard R., 4,162,044, Cl. 241-16.000.

Klooster, Leefert, to L. Klooster & Zonen B.V. Device for fastening a chisel to a rotatable chisel block of a wood working machine. 4,161,973, Cl. 144-224.000.

Klotz, Gunther, to Bayer Aktiengesellschaft. Displacement of a liquid A by a liquid B in a suspension. 4,162,215, Cl. 210-21.000.

Klug, Frederic J.: *See*—
Arendt, Ronald H.; Borom, Marcus P.; Huseby, Irvin C.; and Klug, Frederic J., 4,162,173, Cl. 134-2.000.

Kmita, Anatoly M.: *See*—
Andreev, Anatoly S.; Bagdasarian, Alexandr S.; Gulyaev, Jury V.; and Kmita, Anatoly M., 4,162,415, Cl. 310-313.000.

Knapp, Heinrich; Greiner, Max; Peters, Klaus-Jurgen; and Jaggle, Gunther, to Robert Bosch GmbH. Diaphragm valve. 4,161,961, Cl. 137-501.000.

Knight, Arlen M.; and Hachtmann, William R. Drapery and drapery pleat cleaning tool head. 4,161,802, Cl. 15-331.000.

Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, to Chinoin Gyogyszer Es Vegyeszeti Termeken Gyara Rt. N,N-Disubstituted-2-furylethyl amines. 4,162,327, Cl. 424-285.000.

Kobashi, Kiyoshi: *See*—
Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, 4,161,929, Cl. 123-119.00A.

Kobayashi, Takashi; and Nakamura, Toshikazu, to Murata Manufacturing Co., Ltd. Heating unit for heating fluid. 4,162,395, Cl. 219-367.000.

Kobayashi, Takeo: *See*—
Hiraoka, Tetsuo; and Kobayashi, Takeo, 4,162,251, Cl. 260-239.100.
Kodaira, Kozo: *See*—
Usui, Kiyofumi; and Kodaira, Kozo, 4,161,912, Cl. 101-99.000.
Kogler, Peter; and Zitz, Alfred J., to Vereinigte Osterreichische Eisen- und Stahlwerke-Alpine Montan Aktiengesellschaft. Cutting machine. 4,162,104, Cl. 299-75.000.
Kogure, Hiroshi: *See*—
Yagi, Shizuo; Fujii, Isao; and Kogure, Hiroshi, 4,161,927, Cl. 123-75.00B.
Konishi Chemical Industry Co., Ltd.: *See*—
Ogata, Eiji; Ono, Koji; and Nakagaki, Shoji, 4,162,270, Cl. 260-607.0AR.
Konkler, Anthony W., to Minnesota Mining and Manufacturing Company. Storage assembly for a tape magazine. 4,162,112, Cl. 312-15.000.
Kostanecki, Andrew T., to Kransco Manufacturing, Inc. Monolithic polymer foam sailboat hull. 4,161,796, Cl. 9-6.00P.
Kotzur, Frank W.: *See*—
Wagner, William A.; and Kotzur, Frank W., 4,162,050, Cl. 242-163.000.
Kowalik, Peter M.: *See*—
Bould, Fred; and Kowalik, Peter M., 4,162,385, Cl. 200-153.0SC.
Koyama, Masaya. Automatic sprayer. 4,162,037, Cl. 239-332.000.
Kramer, George M., to Exxon Research & Engineering Co. Isomerization-alkylation systems comprising a Gr. III A Lewis acid and a non-reactive aprotic solvent. 4,162,233, Cl. 252-429.00R.
Kransco Manufacturing, Inc.: *See*—
Kostanecki, Andrew T., 4,161,796, Cl. 9-6.00P.
Kranz, Eckart, to Bayer Aktiengesellschaft. Preparation of phosphorylated amidines. 4,162,280, Cl. 260-968.000.
Krappel, Alfred: *See*—
Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, 4,162,478, Cl. 340-52.00F.
Kress, Werner; Katzer, Johann; Lopic, Franz; and Hepperle, Willi, to Gardena Kress and Kastner GmbH. Implements. 4,162,132, Cl. 403-361.000.
Kruehler, Wolfgang; and Plaettner, Rolf, to Siemens Aktiengesellschaft. Producing layered penta-ultraphosphate monocrystals. 4,162,184, Cl. 156-621.000.
Krupp-Koppers GmbH: *See*—
Haverkamp, Wilhelm, 4,162,147, Cl. 55-191.000.
Kubens, Rolf; and Heine, Heinrich, to Bayer Aktiengesellschaft. Process for the production of synthetic resins containing isocyanurate groups. 4,162,357, Cl. 528-67.000.
Kudchadker, Mohan V.: *See*—
Schievelbein, Vernon H.; Kudchadker, Mohan V.; Varnon, James E.; and Whittington, Lawrence E., 4,161,982, Cl. 166-269.000.
Kugler, Tibor: *See*—
Borer, Werner J.; Kugler, Tibor; and Zuzak, Tomas, 4,162,283, Cl. 264-15.000.
Kuhle, Engelbert; Klauke, Erich; and Frohberger, Paul-Ernst, to Bayer Aktiengesellschaft. Combating fungi with dicarboxylic acid monoarylhydrazides. 4,162,329, Cl. 424-319.000.
Kuhn, Wolfgang: *See*—
Zillgitt, Ulrich; Kuhn, Wolfgang; and Doll, Gunther, 4,162,424, Cl. 315-82.000.
Kuntz, Earl J.: *See*—
English, Joseph J., 4,162,199, Cl. 203-39.000.
Kuo, Han C., to Olin Corporation. Plated metallic cathode. 4,162,204, Cl. 204-43.00R.
Kupper, Wilhelm, to W. Schlafhorst & Co. Device for assorting inadequately wound coils. 4,162,012, Cl. 209-662.000.
Kurumada, Tomoyuki: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,162,246, Cl. 260-45.8NT.
Kusui, Shoji; and Kitagawa, Kazuo, to Nihon Vending Machine Co., Ltd. Automatic energy supply systems of the multi-rate calculating type. 4,162,530, Cl. 364-464.000.
L. B. (Plastics) Limited: *See*—
Litchfield, Leon G.; and Hardy, Terence, 4,162,114, Cl. 312-330.00R.
L. Klooster & Zonen B.V.: *See*—
Klooster, Leefert, 4,161,973, Cl. 144-224.000.
L. R. Nelson Corporation: *See*—
Hayes, Jerry R., 4,162,092, Cl. 285-39.000.
Labelette Company: *See*—
Wesley, John G., 4,162,182, Cl. 156-487.000.
Labinsky, Michael: *See*—
Maringer, Albert; and Labinsky, Michael, 4,161,962, Cl. 137-557.000.
Lachonius, Leif: *See*—
Hallerback, Stig L.; and Lachonius, Leif, 4,162,039, Cl. 239-214.250.
Lada, Christopher O.: *See*—
Horak, Anthony; Rachiatore, Felix A.; and Lada, Christopher O., 4,162,067, Cl. 271-177.000.
Laird, James C.; and Tomlin, Robert L., to Bendix Corporation, The. Conditioning assembly for continuous stack monitoring. 4,161,883, Cl. 73-421.50A.
LaLonde, Paul D.: *See*—
Brown, Donald A.; and LaLonde, Paul D., 4,161,856, Cl. 52-667.000.
Lamb, George D. Method and apparatus for filling down garments. 4,161,970, Cl. 141-114.000.
Lamelot, Pierre M. L., to Societe Anonyme de Telecommunications. Night guidance of self-propelled missiles. 4,162,052, Cl. 244-3.160.
Land, Edwin H.; and Kinsman, Gordon F., to Polaroid Corporation. Methods for making electrical cells and batteries. 4,161,815, Cl. 29-623.400.
Langer, Alois A.: *See*—
Kinney, Philip C.; Heilman, Marlin S.; and Langer, Alois A., 4,161,952, Cl. 128-786.000.
Larsen, Lawrence E.: *See*—
Jacobi, John H.; and Larsen, Lawrence E., 4,162,500, Cl. 343-772.000.
Larsen, Theodore E.; and Celt, James M., to Detector Electronics Corporation. Ultraviolet detection tube quenching circuitry. 4,162,425, Cl. 315-150.000.
Larson, Curtis A.: *See*—
Bothun, Maynard E.; Larson, Curtis A.; Lightner, Gayland E.; and Wilson, David R., 4,162,007, Cl. 206-444.000.
Larson, Ivar W.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.
Lavelle Aircraft Company: *See*—
Barnes, Robert W., 4,161,870, Cl. 70-278.000.
Laves-Arzneimittel G.m.b.H. & Co. K.G.: *See*—
Laves, Hans-Georg, 4,162,306, Cl. 424-125.000.
Laves, Hans-Georg, to Laves-Arzneimittel G.m.b.H. & Co. K.G. Medicine for treating diarrhea. 4,162,306, Cl. 424-125.000.
Lawrence, Leo B.; and Del Rossi, Joseph. Pneumatic vehicle with centrally mounted guide means. 4,162,106, Cl. 406-185.000.
Lawrence Peska Associates, Inc.: *See*—
Hodges, Bill J., deceased, 4,162,015, Cl. 211-87.000.
Lea, Cyril: *See*—
Beard, James H.; Lea, Cyril; and Ludwig, Bernard W., 4,161,810, Cl. 29-427.000.
LeBlanc, Joseph R.: *See*—
Crawford, Duffer B.; Becker, Colman L.; and LeBlanc, Joseph R., 4,162,290, Cl. 422-190.000.
Lee, Chi-Long; Maxson, Myron T.; and Stebleton, Leo F., to Dow Corning Corporation. High strength, extrudable silicone elastomer compositions. 4,162,243, Cl. 260-37.0SB.
Legrand, Francis: *See*—
Durr, Louis; and Legrand, Francis, 4,162,221, Cl. 252-1.000.
Lehmann, Kurt, to Wasagchemie GmbH. Detachable, water-tight connection elements for detonating devices and components which process for the ignition signal. 4,162,116, Cl. 339-60.00M.
Leithem, Phyllis C.; and Conca, Romeo, to International Telephone and Telegraph Corporation. Production of cellulose acetate. 4,162,359, Cl. 536-70.000.
LEK Tovarna farmacevtskih in kemicnih izdelkov, n.sol.o.: *See*—
Zupancic, Boris; and Jenko, Branko, 4,162,364, Cl. 562-408.000.
Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske fabrik Produktionsaktienselskab): *See*—
von Daehne, Welf; and Rasmussen, Poul R., 4,162,259, Cl. 260-397.100.
Leslie, John H.; and Crosby, George A., to Signode Corporation. Strap feeding and tensioning assembly. 4,161,910, Cl. 100-26.000.
Lever Brothers Company: *See*—
Hunt, Leslie; Nicolson, Ian T.; and Whitfield, Thomas M., 4,162,288, Cl. 264-75.000.
Robles, Enrique C., 4,162,228, Cl. 252-90.000.
Segers, Jacobus C., 4,162,260, Cl. 260-424.000.
Levinson, Ariel S.: *See*—
Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.
Lewis Security Systems Limited: *See*—
Gilmour, William D., deceased, 4,162,448, Cl. 325-37.000.
Li, George S.; and Rosen, Irving, to Standard Oil Company, The. Thermoplastic resins with polyindene or coumarone-indene resin. 4,162,277, Cl. 525-146.000.
Licentia Patent-Verwaltungs G.m.b.H.: *See*—
Fischer, Konrad, 4,162,507, Cl. 357-68.000.
Lightner, Gayland E.: *See*—
Bothun, Maynard E.; Larson, Curtis A.; Lightner, Gayland E.; and Wilson, David R., 4,162,007, Cl. 206-444.000.
Lin, An-Chung R., to Burroughs Corporation. Cyanine dye based high saturation sympathetic ink having time delayed disappearance. 4,162,164, Cl. 106-21.000.
Linde Aktiengesellschaft: *See*—
Abels, Theodor; and Gotz, Bernhard, 4,161,992, Cl. 180-306.000.
Lindemann Maschinenfabrik GmbH: *See*—
Schafer, Anton; and Probst, Karl, 4,161,911, Cl. 100-96.000.
Lindes, Peter: *See*—
Rode, France; Lindes, Peter; Eschenbach, Ralph F.; and Fazarinc, Zvonko A., 4,162,531, Cl. 364-571.000.
Lindmayer, Joseph, to Solarex Corporation. Method of forming solar cell with discontinuous junction. 4,162,177, Cl. 148-179.000.
Linger, Harrison K. Artist brush box. 4,162,005, Cl. 206-362.000.
Lion Dentifrice Co., Ltd., The: *See*—
Higo, Moriaki; Toda, Haruhiko; Suzuki, Kunitomo; and Nishida, Yasukuni, 4,162,258, Cl. 260-348.110.
List, Ferdinand; and Alfs, Helmut, to Chemische Werke Huls Aktiengesellschaft. Liquid phase air oxidation process for making phthalic acids. 4,162,365, Cl. 562-416.000.

Litch, Ernest W., III, to General Electric Company. Methods of securing torsionally flexible motor mounting arrangements to supports therefor. 4,161,812, Cl. 29-446.000.

Litchfield, Leon G.; and Hardy, Terence, to L. B. (Plastics) Limited. Drawers and drawer components. 4,162,114, Cl. 312-330.00R.

Litton Systems, Inc.: *See*—
Buck, Ronald G., 4,162,381, Cl. 219-10.55B.

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Furstenberg, Joachim, 4,162,148, Cl. 55-272.000.

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Shimdada, Wataru; Machida, Kazumichi; Hoshinouchi, Susumu; Hiramoto, Seigo; and Okada, Masaru, 4,162,389, Cl. 219-121.00P.

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Caraher, James R., 4,162,115, Cl. 316-4.000.

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Katzer, Melvin F.; Klimpel, Richard R.; and Manfroy, Willy, 4,162,045, Cl. 241-16.000.

MAP International: *See*—
Sharp, James D., 4,162,407, Cl. 250-468.000.

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Rodriguez, Ludovic; and Marchal, Lucien, 4,162,325, Cl. 424-274.000.

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Mars Incorporated: *See*—
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Marsh, Ronald W., to Pullman Incorporated. Railway sleeping car compartmental arrangement. 4,161,914, Cl. 105-344.000.

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Hentschel, Claus; Martin, Karl; and Volckaert, Leonard, 4,161,844, Cl. 47-62.000.

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Kaplow, Roy; and Frank, Robert I., 4,162,174, Cl. 136-89.0PC.

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Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, 4,162,511, Cl. 358-128.000.

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Takeyama, Tetsu; Takahashi, Akio; Matsumura, Kiichiro; and Kitagawa, Keiya, 4,162,299, Cl. 423-242.000.

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Kamegaya, Takeo; Yokozawa, Minori; Kaneko, Ryuichi; and Matsuzaki, Hideomi, 4,162,427, Cl. 315-169.100.

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Cadoff, Laurence H.; Mattox, Douglas M.; and Elms, Robert T., 4,162,430, Cl. 315-309.000.

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Bouton, Daniel A.; Martoglio, Jean E.; and Maulat, Jean-Pierre, 4,162,064, Cl. 267-177.000.

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Lee, Chi-Long; Maxson, Myron T.; and Stebleton, Leo F., 4,162,243, Cl. 260-37.0SB.

Maxwell, Glenn D.: *See*—
Mitchell, Charles S.; and Maxwell, Glenn D., 4,162,501, Cl. 346-140.00R.

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Maldonado, Juan R.; and Maydan, Dan, 4,162,528, Cl. 364-563.000.

Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, to Hoechst Aktiengesellschaft. Bis-(alkylphenyl)-alkanecarboxylic acid hydrazides, their preparation and use. 4,162,247, Cl. 260-45.9NC.

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McCague, John E., Sr.; and McCague, Elinor M., 4,162,101, Cl. 297-6.000.

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McCormack, John L.: *See*—
Nickell, Larry C.; and McCormack, John L., 4,162,479, Cl. 340-63.000.

McCormick, Gerald L. Water reuse system. 4,162,218, Cl. 210-104.000.
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Howard, Guy J.; McCrumb, Walter C.; and Spivey, Paul R., 4,162,396, Cl. 235-304.000.
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Day, David R.; and McElroy, Lucian G., 4,161,801, Cl. 15-316.00R.
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Wood, Donald C.; and McLaughlin, Robert L., 4,162,186, Cl. 162-5.000.
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Schwab, Gerhart, 4,162,165, Cl. 106-21.000.
Smith, Glen C.; and Sanders, Frederick W., 4,162,187, Cl. 162-29.000.
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Wilcox, Forrest S.; Pinsky, Jules; and Cooper, Scott A., 4,162,343, Cl. 428-212.000.
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Hauslein, Reinhard, 4,162,054, Cl. 248-94.000.
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Merchan, Mercedes A., 4,161,793, Cl. 4-134.000.
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Cassidy, Patrick J.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, 4,162,324, Cl. 424-274.000.
Kahan, Jean S.; and Kahan, Frederick M., 4,162,193, Cl. 43-121.000.
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Strachan, Robert G.; Paleveda, William J.; Veber, Daniel F.; and Holly, Frederick W., 4,162,248, Cl. 260-112.50S.
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Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,162,319, Cl. 424-250.000.
Merkle, Karl L.: *See—*
King, Wayne E.; and Merkle, Karl L., 4,162,401, Cl. 250-311.000.
Merritt, Thurman L. Water-flow control device. 4,161,965, Cl. 138-45.000.
Meyer, Horst: *See—*
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.
Meyer, William J.: *See—*
Sienkiewicz, Boleslaw; Meyer, William J.; and Giacone, Joseph, 4,162,332, Cl. 426-249.000.
Micafil AG: *See—*
Fuchs, Heinz, 4,162,340, Cl. 428-83.000.
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Mikina Stanley J. Exercising bicycle. 4,162,084, Cl. 280-229.000.
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Miller, Stephen J., to Chevron Research Company. Combination process for octane upgrading the low-octane C_5-C_6 component of a gasoline pool. 4,162,212, Cl. 208-79.000.
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Cook, Darwen J.; and Millers, Donald A., II, 4,162,520, Cl. 364-200.000.
Miner Enterprises, Inc.: *See—*
Strauss, Paul, 4,162,062, Cl. 267-8.00R.
Mines de Potasse d'Alsace S.A.: *See—*
Aubry, Andre; and Bichara, Michel, 4,162,297, Cl. 423-158.000.
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Konkler, Anthony W., 4,162,112, Cl. 312-15.000.
Munkberg, John A., 4,162,477, Cl. 340-32.000.
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Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., to Proizvodstvennoe obiedinenie "Tekhenergokhimprom". Self-cleaning filter. 4,162,219, Cl. 210-108.000.
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Kinney, Philip C.; Heilman, Marlin S.; and Langer, Alois A., 4,161,952, Cl. 128-786.000.
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Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, 4,162,315, Cl. 424-250.000.
Mitsubishi Denki Kabushiki Kaisha: *See—*
Akamatsu, Masahiko, 4,162,413, Cl. 307-253.000.
Shimdada, Wataru; Machida, Kazumichi; Hoshinouchi, Susumu; Hiramoto, Seigo; and Okada, Masaru, 4,162,389, Cl. 219-121.00P.
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Kitagawa, Toshikatsu, 4,162,134, Cl. 408-46.000.
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Miyanohara, Atsushi: *See—*
Mizuno, Kyosuke; Miyanohara, Atsushi; Ishihara, Yoshimitsu; and Ohtomo, Nobuya, 4,162,192, Cl. 435-239.000.
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Abe, Takeshi; Tsuchiya, Keishin; Saito, Kazuhito; Mizuta, Toshiaki; and Yoshihara, Ichiro, 4,162,484, Cl. 340-150.000.
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Mobil Oil Corporation: *See—*
Braid, Milton, 4,162,225, Cl. 252-50.000.
Bridger, Robert F., 4,162,224, Cl. 252-49.600.
Zrinscak, Fred S., Sr.; and Karsner, Grant G., 4,162,213, Cl. 208-89.000.
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Bloxham, Samuel D., 4,161,941, Cl. 126-85.00B.
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Mommsen, Gordon V.; Hemming, Dale R.; and Hudrlik, Richard E., to Graco Inc. Spray gun safety sensor. 4,162,042, Cl. 239-526.000.
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Creed, Clark E., 4,161,896, Cl. 81-121.00A.
Monk, Robert J. Solar energy collector. 4,161,942, Cl. 126-271.000.
Monroe, Kenneth E.: *See—*
Waldorf, Lindsey E.; and Monroe, Kenneth E., 4,162,436, Cl. 318-139.000.
Monsanto Company: *See—*
Feierstein, Harold E.; and Davis, Mark E., 4,162,236, Cl. 252-558.000.
Montgomery, Carl T., to Dow Chemical Company, The. Method for facilitating transportation of particulate on a conveyor belt in a cold environment. 4,162,347, Cl. 428-411.000.
Montgomery, Mark J.: *See—*
Putt, Ronald A.; and Montgomery, Mark J., 4,162,351, Cl. 429-15.000.
Mookherjee, Braja D.: *See—*
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.
Moore, James L., to Weed Eater, Inc. Apparatus for cutting vegetation. 4,161,820, Cl. 30-276.000.
Moorhead, Ritchie R. Picture hanging system. 4,162,056, Cl. 248-495.000.
Moreno, Isabel L., to Ford Aerospace & Communications Corp. Thermal compensator linkage. 4,162,120, Cl. 350-253.000.
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Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., 4,162,295, Cl. 423-61.000.
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Morimura, Syoji: *See—*
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,162,246, Cl. 260-45.8NT.
Morita, Yoshinori: *See—*
Inamoto, Hiroshi; and Morita, Yoshinori, 4,161,851, Cl. 52-208.000.
Morley, Richard E., to Gould Inc., Modicon Div. Digital input/output system and method. 4,162,536, Cl. 364-900.000.
Morrell, Albert M., to RCA Corporation. Cathode ray tube having corrugated shadow mask with slits. 4,162,421, Cl. 313-403.000.
Morris, John W., Jr.: *See—*
Hwang, Sun-Keun; and Morris, John W., Jr., 4,162,158, Cl. 75-124.000.
Morton-Norwich Products, Inc.: *See—*
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,162,257, Cl. 260-347.300.
Moser, Otto W.: *See—*
Thilo, Peer; and Moser, Otto W., 4,162,489, Cl. 340-518.000.
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Bauer, Heinrich F.; Helbling, Gerhard; and Hildebrandt, Florian, 4,161,877, Cl. 73-140.000.
Motorola, Inc.: *See—*
Dydyk, Michael; and Tuzzolino, Joseph R., 4,162,458, Cl. 331-56.000.
Moulds, Gordon M., to Du Pont de Nemours, E. I., and Company. Flame-resistant fiber. 4,162,275, Cl. 525-428.000.

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Carpenter, David A., 4,161,876, Cl. 73-65.000.

Muckerheide, Myron C. Laser system and method and laser amplifier for use therewith. 4,161,944, Cl. 128-654.000.

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Ellis, Daniel A., 4,162,058, Cl. 251-326.000.

Muennich, Hermann; and Kispert, Klaus, to SKF Kugellagerfabriken GmbH. Bonded guide rim in a race for a rolling bearing. 4,162,109, Cl. 308-216.000.

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Witzke, Lothar; and Muller, Wolfgang, 4,162,294, Cl. 423-24.000.

Mulvey, Robert F.; and Crepeau, Charles E., to General Electric Company. Thermal insulation material and process for making the same. 4,161,855, Cl. 52-612.000.

Munakata, Toshio: *See—*
Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, 4,162,315, Cl. 424-250.000.

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Kobayashi, Takashi; and Nakamura, Toshikazu, 4,162,395, Cl. 219-367.000.

Muscillo, Pasquale. Cover assembly for open boxes of vehicles. 4,162,100, Cl. 296-100.000.

Myatt, John: *See—*
Brown, Michael H.; and Myatt, John, 4,162,369, Cl. 136-202.000.

Myers, Richard L.: *See—*
Fite, Wade L.; Myers, Richard L.; and Brackmann, Richard T., 4,162,404, Cl. 250-423.00R.

Nadj, Henriette: *See—*
Pierre, Kenneth J.; Tung, Ker-Kong; and Nadj, Henriette, 4,162,194, Cl. 435-15.000.

Naegeli, Peter: *See—*
Helmlinger, Daniel; and Naegeli, Peter, 4,162,266, Cl. 260-586.00F.

Naffziger, Dewein H., to Advance Achievement Systems, Inc.; and Wisconsin Centrifugal Inc. Process for melting cast iron borings. 4,162,156, Cl. 75-12.000.

Nagura, Nobuyoshi: *See—*
Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, 4,161,919, Cl. 112-275.000.
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Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.

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Ogata, Eiji; Ono, Koji; and Nakagaki, Shoji, 4,162,270, Cl. 260-607.0AR.

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Nakamura, Hideo: *See—*
Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, 4,162,316, Cl. 424-250.000.

Nakamura, Masato; Nomura, Yoshika; and Katori, Tamio, to Honshu Seishi Kabushiki Kaisha. Process for producing pulp. 4,162,188, Cl. 162-76.000.

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Kobayashi, Takashi; and Nakamura, Toshikazu, 4,162,395, Cl. 219-367.000.

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Shimamura, Isao; and Nakamura, Yasuharu, 4,162,161, Cl. 96-59.000.

Nakamura, Zenzo: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenzo; Okubo, Osamu; and Uchiyama, Takashi, 4,162,426, Cl. 315-151.000.

Nakano, Jiro: *See—*
Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, 4,161,929, Cl. 123-119.00A.

Nakano, Kenichi: *See—*
Eden, Richard C.; and Nakano, Kenichi, 4,162,203, Cl. 204-38.00R.

Nakatsuka, Hisayoshi, to Namiki Precision Jewel Co., Ltd. Tone arm. 4,162,076, Cl. 274-23.00R.

Nakazawa, Koji; Kikuchi, Toshiaki; and Fujita, Toshihito, to Nitto Boseki Co., Ltd. Apparatus for manufacturing a glass fiber chopped strand mat. 4,161,897, Cl. 83-73.000.

Nakazawa, Makoto: *See—*
Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, 4,162,315, Cl. 424-250.000.

Naletov, Anatoly S.: *See—*
Peregudov, Lev V.; Malashin, Mikhail M.; Naletov, Anatoly S.; Nenakhov, Jury Y.; and Sokolov, Evgeny A., 4,162,159, Cl. 75-130.00R.

Namiki Precision Jewel Co., Ltd.: *See—*
Nakatsuka, Hisayoshi, 4,162,076, Cl. 274-23.00R.

Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, to Abbott Laboratories. Antibiotic XK-99 and process for production thereof. 4,162,305, Cl. 424-120.000.

National Appliance Company: *See—*
Folsom, Max H.; and Dickman, Michael D., 4,162,196, Cl. 435-313.000.

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Naylor, Donald B. Invertible prefabricated door. 4,161,845, Cl. 49-380.000.

Nedyalkov, Ivan P.; Kanchev, Kancho T.; and Trenkov, Svetoslav R., to CUV "Progress". Device for converting the energy of sea water. 4,162,409, Cl. 290-53.000.

Nelson, Richard L.; and Nelson, Walter P., to Mars Incorporated. Method and apparatus for making filled food product. 4,162,333, Cl. 426-283.000.

Nelson, Walter P.: *See—*
Nelson, Richard L.; and Nelson, Walter P., 4,162,333, Cl. 426-283.000.

Nelson, Wayne F.: *See—*
Fournier, Onazip J.; and Nelson, Wayne F., 4,161,985, Cl. 166-321.000.

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Neptune Eastech, Inc.: *See—*
Fussell, Theodore J., Jr., 4,161,878, Cl. 73-194.0VS.

New Asian Corporation: *See—*
Whang, Uoo S., 4,161,847, Cl. 51-33.00W.

Newell, Robert H.: *See—*
Doss, James D.; Cowan, Robert E.; Newell, Robert H.; and McCabe, Charles W., 4,161,950, Cl. 128-303.140.

Neyraud, Rene, to Verdol, SA. Method to connect two string-like members. 4,161,969, Cl. 139-90.000.

NGK Insulators, Ltd.: *See—*
Tanabashi, Isao, 4,162,285, Cl. 264-66.000.

Nickell, Larry C.; and McCormack, John L., to Appalachian Electronic Instruments, Inc. Automobile burglar alarm with battery voltage sensing means. 4,162,479, Cl. 340-63.000.

Nicolet, Rene; and Schaerer, Robert, to Lonza Ltd. Process for the production of transparent polymers of vinyl chloride with very high impact strength. 4,162,239, Cl. 260-29.7UP.

Nicolson, Ian T.: *See—*
Hunt, Leslie; Nicolson, Ian T.; and Whitfield, Thomas M., 4,162,288, Cl. 264-75.000.

Niemeyer, Lutz: *See—*
De Bruyne, Patrick; and Niemeyer, Lutz, 4,162,514, Cl. 361-2.000.

Nihon Beru-Haueru Kabushiki Kaisha: *See—*
Isono, Tadao, 4,162,123, Cl. 354-25.000.

Nihon Vending Machine Co., Ltd.: *See—*
Kusui, Shoji; and Kitagawa, Kazuo, 4,162,530, Cl. 364-464.000.

Nijman, John P.; and Boutros, Kamal S., to Bunker Ramo Corporation. Coaxial switch with magnetic locking. 4,162,469, Cl. 335-186.000.

Nikolaeva, Valentina G.: *See—*
Razumov, Alexandr I.; Tarasova, Raisa I.; Nikolaeva, Valentina G.; and Yafarova, Rimma L., 4,162,264, Cl. 260-558.00H.

Niles Parts Co., Ltd.: *See—*
Kawaki, Katsumi; and Inabe, Shinya, 4,162,418, Cl. 310-49.00R.

Nippon Electric Co., Ltd.: *See—*
Yanagisawa, Masahiro; and Suganuma, Yoji, 4,162,350, Cl. 428-633.000.

Nippon Hoso Kyokai: *See—*
Kamegaya, Takeo; Yokozawa, Minori; Kaneko, Ryuichi; and Matsuzaki, Hideomi, 4,162,427, Cl. 315-169.100.

Nippon Kogaku K. K.: *See—*
Matsui, Sei, 4,162,498, Cl. 354-155.000.

Nippon Shinyaku Co., Ltd.: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.

Nippondenso Co., Ltd.: *See—*
Takabatake, Yoshinobu, 4,162,414, Cl. 310-68.00R.

Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, to Aisin Seiki Co., Ltd. Motor control system for sewing machine. 4,161,919, Cl. 112-275.000.

Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, to Aisin Seiki Co., Ltd. Motor control system for one stitch sewing control of a sewing machine. 4,161,920, Cl. 112-275.000.

Nishida, Koji; Kawai, Taneichi; Hamajima, Shigemitsu; Nagura, Nobuyoshi; and Hida, Tsuneo, to Aisin Seiki Co., Ltd. Motor control system for sewing machine. 4,161,921, Cl. 112-275.000.

Nishida, Yasukuni: *See—*
Higo, Moriaki; Toda, Haruhiko; Suzuki, Kunitomo; and Nishida, Yasukuni, 4,162,258, Cl. 260-348.110.

Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, to Dainippon

Pharmaceutical Co., Ltd. 1-Substituted-4-(1,2-diphenylethyl)piperazine derivatives and compositions containing the same. 4,162,316, Cl. 424-250.000.
Nissan Motor Company, Limited: *See—*
Inamoto, Hiroshi; and Morita, Yoshinori, 4,161,851, Cl. 52-208.000.
Shimizu, Kazuaki, 4,162,108, Cl. 303-115.000.
Nissen Corporation: *See—*
Nissen, George P.; and Kelly, Harlan J., 4,162,063, Cl. 267-73.000.
Nissen, George P.; and Kelly, Harlan J., to Nissen Corporation. Adjustable springs for trampolines and the like. 4,162,063, Cl. 267-73.000.
Nisshin Sangyo Co., Ltd.: *See—*
Ota, Hiroshi, 4,161,905, Cl. 91-363.00R.
Nitto Boseki Co., Ltd.: *See—*
Nakazawa, Koji; Kikuchi, Toshiaki; and Fujita, Toshihito, 4,161,897, Cl. 83-73.000.
Nixdorf Computer AG: *See—*
Hanewinkel, Lorenz, 4,162,519, Cl. 364-200.000.
Nogier, Paul. Needle implanting apparatus. 4,161,943, Cl. 128-1.300.
Noguchi, Kohji: *See—*
Miyake, Tetsuya; Noguchi, Kohji; and Fujimoto, Kohichi, 4,162,268, Cl. 260-592.000.
Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, to Toyota Jidosha Kogyo Kabushiki Kaisha. Exhaust gas recirculation control system for an internal combustion engine. 4,161,929, Cl. 123-119.00A.
Nomura, Yoshika: *See—*
Nakamura, Masato; Nomura, Yoshika; and Katori, Tamio, 4,162,188, Cl. 162-76.000.
Nordmeyer, Friedrich: *See—*
Sack, Ernst T.; Nordmeyer, Friedrich; and Kersting, Emil F., 4,161,885, Cl. 73-597.000.
Norman, Thomas W. Self-storing step structure for vehicular mounting. 4,161,997, Cl. 182-93.000.
Norris, Patrick H. Hollow pyramid containing indicia-bearing spheres. 4,162,073, Cl. 273-144.00B.
Northern Telecom Limited: *See—*
Cielo, Paolo; and Westwood, William D., 4,162,502, Cl. 346-140.00R.
Norton, Richard V., to Suntech, Inc. Honeycomb insulation structure. 4,162,341, Cl. 428-117.000.
Nosach, Vladimir M.: *See—*
Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., 4,162,107, Cl. 303-3.000.
Noyon, Gustave M., to Societe Internationale d'Investissements et de Participations par abreviation INTERPAR. Granular or pulverulent product storing and handling installation. 4,162,017, Cl. 414-313.000.
Nudenberg, Walter: *See—*
Rim, Yong S.; and Nudenberg, Walter, 4,162,276, Cl. 525-2.000.
Nuovo Pignone S.p.A.: *See—*
Bergamini, Giorgio, 4,161,832, Cl. 40-451.000.
Nyer, Evan K., to Union Carbide Corporation. Process for removal of suspended solids from liquid. 4,162,216, Cl. 210-73.00R.
Nyssen, James. Method and apparatus for the manufacture of reinforced smooth flow pipe. 4,161,811, Cl. 29-429.000.
Ogata, Eiji; Ono, Koji; and Nakagaki, Shoji, to Konishi Chemical Industry Co., Ltd. Process for producing 4,4'-dihydroxydiphenylsulfone of high purity. 4,162,270, Cl. 260-607.0AR.
Ogden, Dennis H.; and Smith, Frank G., to British Industrial Plastics Limited. Foam products. 4,162,128, Cl. 366-154.000.
Ohata, Katsuya: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.
Ohno, Nobuo: *See—*
Mizutani, Masato; Higo, Akio; Ohno, Nobuo; and Hirai, Hajime, 4,162,269, Cl. 260-600.00R.
Ohtomo, Nobuya: *See—*
Mizuno, Kyosuke; Miyanohara, Atsushi; Ishihara, Yoshimitsu; and Ohtomo, Nobuya, 4,162,192, Cl. 435-239.000.
Oka, Tetsuo: *See—*
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,162,305, Cl. 424-120.000.
Okachi, Ryo: *See—*
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,162,305, Cl. 424-120.000.
Okada, Masaru: *See—*
Shimdada, Wataru; Machida, Kazumichi; Hoshinouchi, Susumu; Hiramoto, Seigo; and Okada, Masaru, 4,162,389, Cl. 219-121.00P.
Okazaki, Hiroyuki: *See—*
Juzu, Shigeru; Okazaki, Hiroyuki; and Suzuki, Yasuyuki, 4,162,348, Cl. 428-474.000.
Okinaka, Yutaka: *See—*
D'Asaro, Lucian A.; and Okinaka, Yutaka, 4,162,337, Cl. 427-92.000.
Okubo, Osamu: *See—*
Tsunekawa, Tokuichi; Nakamura, Zenzo; Okubo, Osamu; and Uchiyama, Takashi, 4,162,426, Cl. 315-151.000.
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., to Hewlett-Packard Company. Programmable calculator including data format display control means. 4,162,532, Cl. 364-710.000.
Olin Corporation: *See—*
Kuo, Han C., 4,162,204, Cl. 204-43.00R.
Oliver, Richard L.: *See—*
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., 4,161,968, Cl. 138-118.100.
Olsen, Svein E. Noise immune voltage comparator. 4,162,454, Cl. 328-147.000.
Omark Industries, Inc.: *See—*
Pomeroy, Raymond V., 4,162,033, Cl. 227-10.000.
Ono, Koji: *See—*
Ogata, Eiji; Ono, Koji; and Nakagaki, Shoji, 4,162,270, Cl. 260-607.0AR.
Osaka, Susumu: *See—*
Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, 4,162,511, Cl. 358-128.000.
Osder, Stephen S., to Sperry Rand Corporation. Dual servo automatic pilot with improved failure monitoring. 4,162,438, Cl. 318-564.000.
Ota, Hiroshi, to Nisshin Sangyo Co., Ltd. Hydraulic servomechanism. 4,161,905, Cl. 91-363.00R.
Ozaki, Takayuki: *See—*
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.
P. R. Mallory & Co. Inc.: *See—*
Dey, Arabinda N., 4,162,202, Cl. 204-2.100.
Packaging Systems Corporation: *See—*
Hovsepian, Charles J., 4,162,010, Cl. 206-823.000.
Padmore & Barnes International Limited: *See—*
Roberts, Patrick J.; Hogan, Kevin P.; and Kealy, Thomas, 4,161,827, Cl. 36-11.000.
Pako Corporation: *See—*
Strunc, Gerald R., 4,161,899, Cl. 83-371.000.
Paleveda, William J.: *See—*
Strachan, Robert G.; Paleveda, William J.; Veber, Daniel F.; and Holly, Frederick W., 4,162,248, Cl. 260-112.50S.
Pall Corporation: *See—*
Seibert, Chesterfield F., 4,162,146, Cl. 55-163.000.
Pallavicini, Piero. Composite modular furniture. 4,162,113, Cl. 312-199.000.
Papa, Anthony J.; and Runyan, Walter W., to Union Carbide Corporation. Method of producing flexible flame retarded polyurethane foam. 4,162,353, Cl. 521-107.000.
Parad, Leonard I.: *See—*
DiTullio, Joseph G.; and Parad, Leonard I., 4,162,463, Cl. 333-117.000.
Parady, Edward D.: *See—*
Lorenz, Roman R.; Parady, Edward D.; and Thielking, William H., 4,162,361, Cl. 546-72.000.
Park, Jack H., to Texaco Development Corporation. Method for recovering hydrocarbons. 4,161,981, Cl. 166-261.000.
Parker, Earl R.; Zackay, Victor F.; Bhat, Manjeshwar S.; and Garrison, Warren M., Jr., to United States of America, Energy. Secondary hardening steel having improved combination of hardness and toughness. 4,162,157, Cl. 75-124.000.
Parker-Hannifin Corporation: *See—*
Jelinek, Jerry G., 4,162,079, Cl. 277-205.000.
Parkes, Roger J., to Rolls-Royce Limited. Cooled blade for a gas turbine engine. 4,162,136, Cl. 416-97.00R.
Pascaud, Xavier: *See—*
Malen, Charles; Roger, Pierre; and Pascaud, Xavier, 4,162,322, Cl. 424-267.000.
Pasek, Frank S.: *See—*
D'Hooge, Richard E.; and Pasek, Frank S., 4,161,804, Cl. 16-48.500.
Patterson, Lionel. Portable bench frame for power tools. 4,161,974, Cl. 144-287.000.
Pavlas, Emil P., to Western Electric Company, Incorporated. Ejector controlled soldering device. 4,162,034, Cl. 228-37.000.
Peace, John; Wright, Harold; and Clague, Kenneth, to British Steel Corporation. Electromagnet lifting device. 4,162,471, Cl. 335-291.000.
Pearson, Dale S.; and Shurpik, Anton, to Firestone Tire & Rubber Co., The. Promoters for radiation induced cross-linking in polymer substances. 4,162,354, Cl. 525-3.000.
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, to Morton-Norwich Products, Inc. N,N-dimethyl-5-phenyl-2-furamides. 4,162,257, Cl. 260-347.300.
Pelovski, Yoncho G.: *See—*
Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.
Pemco-Kalamazoo, Inc.: *See—*
Black, John W., 4,161,893, Cl. 74-813.00R.
Pennwalt Corporation: *See—*
Thanawalla, Chandrakant B., 4,161,949, Cl. 128-247.000.
Penrose, Alexander B.: *See—*
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,162,253, Cl. 260-306.70T.
Peregudov, Lev V.; Malashin, Mikhail M.; Naletov, Anatoly S.; Nenakhov, Jury Y.; and Sokolov, Evgeny A. Cast iron modifier and method of application thereof. 4,162,159, Cl. 75-130.00R.
Perkin-Elmer Corporation, The: *See—*
Sebens, Carl R.; and Fisher, Chester G., III, 4,162,379, Cl. 219-497.000.
Personal S.p.A.: *See—*
Conterno, Giovanni, 4,161,892, Cl. 74-552.000.

Peters, Karl-Heinz: *See—*
Buhler, Hans-Eugen; Robusch, Gunter; Schafer, Herbert; and Peters, Karl-Heinz, 4,162,061, Cl. 266-193.000.
Peters, Klaus-Jurgen: *See—*
Knapp, Heinrich; Greiner, Max; Peters, Klaus-Jurgen; and Jaggle, Gunther, 4,161,961, Cl. 137-501.000.
Peterson, Brent A.: *See—*
Peterson, Lyle R.; and Peterson, Brent A., 4,161,850, Cl. 52-65.000.
Peterson, Lyle R.; and Peterson, Brent A. Room divider. 4,161,850, Cl. 52-65.000.
Petro, James, to Westinghouse Electric Corp. Molten glass metering device for making lamp bases. 4,162,152, Cl. 65-164.000.
Pfahler, Gerhard: *See—*
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,162,247, Cl. 260-45.9NC.
Pfizer Inc.: *See—*
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,162,253, Cl. 260-306.70T.
Phelps, Paul S., to Star Sales Company. Folding pocket knife having replaceable blades. 4,161,818, Cl. 30-157.000.
Phillips Petroleum Company: *See—*
Alleman, Carl E., 4,162,145, Cl. 55-32.000.
Gragson, James T.; and Williams, Ralph P., 4,162,223, Cl. 252-33.200.
Gunnell, Thomas J.; and Hann, Paul D., 4,162,286, Cl. 264-117.000.
Gunnell, Thomas J.; and Hann, Paul D., 4,162,287, Cl. 264-117.000.
Skraba, Frank W., 4,162,273, Cl. 585-854.000.
Stapp, Paul R., 4,162,363, Cl. 560-246.000.
Thomas, William E., 4,162,004, Cl. 206-349.000.
Vautrain, Lucien H., 4,162,272, Cl. 62-24.000.
Worley, Nathan T., 4,161,805, Cl. 19-98.000.
Pierre, Kenneth J.; Tung, Ker-Kong; and Nadj, Henriette, to Beckman Instruments, Inc. Kinetic assay for acid phosphotase and composition therefore. 4,162,194, Cl. 435-15.000.
Pietrantonio, Frank. Glass cutter. 4,161,819, Cl. 30-164.950.
Pinsky, Jules: *See—*
Wilcox, Forrest S.; Pinsky, Jules; and Cooper, Scott A., 4,162,343, Cl. 428-212.000.
Pitrat, Alain, to Societe Anonyme des Equipements S.E.I.M. Safety-type dashboard control for choke or the like. 4,161,993, Cl. 180-90.000.
Pitts, Robert W., Jr., to Texaco Inc. Fiber optic well logging means and method. 4,162,400, Cl. 250-256.000.
Pittwood, Donald G.: *See—*
Bernardo, Edward T.; Faure, Louis H.; Johnson, Alfred H.; and Pittwood, Donald G., 4,161,817, Cl. 29-630.00B.
Plaettner, Rolf: *See—*
Kruehler, Wolfgang; and Plaettner, Rolf, 4,162,184, Cl. 156-621.000.
Plessey Handel und Investments AG: *See—*
Butler, Denis V., 4,162,209, Cl. 204-192.00C.
Pohlke, Rolf: *See—*
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,162,319, Cl. 424-250.000.
Pohlmann, Gottfried; and Schneider, Egon, to Blaupunkt-Werke GmbH. Loudspeaker housing forming a closed, damped system, particularly for automotive installation. 4,161,995, Cl. 181-150.000.
Polaroid Corporation: *See—*
Land, Edwin H.; and Kinsman, Gordon F., 4,161,815, Cl. 29-623.400.
Pomeroy, Raymond V., to Omark Industries, Inc. Powder actuated tool. 4,162,033, Cl. 227-10.000.
Potma, Theodorus H.; and Tomassen, Gerhardus T. H., to U.S. Philips Corporation. Printing head with taut wire electrodes. 4,162,503, Cl. 346-163.000.
PPG Industries, Inc.: *See—*
Crico, Aurelio M., 4,162,201, Cl. 203-67.000.
Pretzel, Dieter: *See—*
Dubiel, Oswald; and Pretzel, Dieter, 4,162,002, Cl. 192-99.00A.
Prill, Robert S., to Singer Company, The. Updating an en-route Tacan navigation system to a precision landing aid. 4,162,495, Cl. 343-7.300.
Probst, Karl: *See—*
Schafer, Anton; and Probst, Karl, 4,161,911, Cl. 100-96.000.
Production Engineering Research Association of Great Britain, The: *See—*
Beard, James H.; Lea, Cyril; and Ludwig, Bernard W., 4,161,810, Cl. 29-427.000.
Proeschl, Bernard E., to Caterpillar Tractor Co. Modular truck body. 4,162,096, Cl. 296-196.000.
Proizvodstvennoe obiedinenie "Tekhenergokhimprom": *See—*
Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.
Propst, Paul L.: *See—*
Propst, Robert L.; and Propst, Paul L., 4,161,803, Cl. 16-18.00A.
Propst, Robert L.; and Propst, Paul L. Caster. 4,161,803, Cl. 16-18.00A.
Prosky, Howard S., to Electromedics, Inc. Linearized digital thermometer. 4,161,880, Cl. 73-342.000.
Pujol, Carlos O. Horizontal-axle grinder with rotatable sieve. 4,162,046, Cl. 241-46.170.
Pullman Incorporated: *See—*
Crawford, Duffer B.; Becker, Colman L.; and LeBlanc, Joseph R., 4,162,290, Cl. 422-190.000.
Marsh, Ronald W., 4,161,914, Cl. 105-344.000.
Pulsepower Systems, Incorporated: *See—*
Groen, William; and Elmore, Lester C., 4,161,904, Cl. 89-7.000.
Puma-Sportschuhfabriken Rudolf Dassler KG: *See—*
Benseler, Hans; and Schaefer, Horst, 4,161,828, Cl. 36-32.00R.
Purolator: *See—*
Servas, Francis M., 4,162,220, Cl. 210-448.000.
Putt, Ronald A.; and Montgomery, Mark J., to Electric Power Research Institute, Inc. Metal-halogen cell operation with storage of halogen via organic complexation external to the electrochemical cell. 4,162,351, Cl. 429-15.000.
Qasim, Javed, to Aerojet-General Corporation. Linear retractable seal valve. 4,162,057, Cl. 251-168.000.
Quest, Roland G. Boat ramp. 4,161,795, Cl. 9-1.600.
Quinlan, Kenneth P.: *See—*
Hutta, Joseph J.; and Quinlan, Kenneth P., 4,161,826, Cl. 34-12.000.
R & I Patent Corporation: *See—*
Gubelmann, William S., deceased; Gubelmann, Walter S., executor; and Grier, William R., 4,162,130, Cl. 400-4.000.
Rabinovich, Georgy L.: *See—*
Maslyansky, Gdal N.; Rabinovich, Georgy L.; Treiger, Leonid M.; Gokhman, Boris K.; and Seleznev, Viktor D., 4,162,214, Cl. 585-471.000.
Rachiatore, Felix A.: *See—*
Horak, Anthony; Rachiatore, Felix A.; and Lada, Christopher O., 4,162,067, Cl. 271-177.000.
Random Electronics International Pty. Limited: *See—*
Ross, John; and Sala-Spini, Amedeo F., 4,162,493, Cl. 340-752.000.
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., to Union Carbide Corporation. Food casing and method of preparing same. 4,161,968, Cl. 138-118.100.
Rasmussen, Poul R.: *See—*
von Daehne, Welf; and Rasmussen, Poul R., 4,162,259, Cl. 260-397.100.
Raymond International, Inc.: *See—*
Swenson, William J., 4,161,807, Cl. 24-263.0SW.
Raytheon Company: *See—*
Scharfman, Howard, 4,162,459, Cl. 331-90.000.
Raz, Zeev. Hand shower and temperature indicating unit. 4,161,881, Cl. 73-343.00R.
Razumov, Alexandr I.; Tarasova, Raisa I.; Nikolaeva, Valentina G.; and Yafarova, Rimma L. Process for preparing diphenylphosphinylacetic acid hydrazide. 4,162,264, Cl. 260-558.00H.
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V. Medicinal preparation with pronounced vegetotropic and antiepileptic effect for treating psychoneurotic disorders. 4,162,311, Cl. 424-211.000.
RCA Corporation: *See—*
Beyers, Billy W., Jr.; and Suchko, Adam J., 4,162,513, Cl. 358-191.000.
Dietz, Wolfgang F. W., 4,162,434, Cl. 315-411.000.
Hanak, Joseph J., 4,162,505, Cl. 357-30.000.
Hsu, Sheng T., 4,162,504, Cl. 357-23.000.
Keizer, Eugene O., 4,162,510, Cl. 358-128.000.
Mawhinney, Daniel D.; Wolkstein, Herbert J.; Rosen, Arye; and Turski, Zygmond, 4,162,412, Cl. 307-237.000.
Morrell, Albert M., 4,162,421, Cl. 313-403.000.
Smith, Joseph L., 4,162,470, Cl. 335-210.000.
Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, 4,162,511, Cl. 358-128.000.
Rea, Andrew. Work holding fixture for cylindrical workpieces. 4,162,065, Cl. 269-294.000.
Recognition Equipment Incorporated: *See—*
DuVall, Dale R., 4,162,481, Cl. 340-146.3AG.
Reed, Frances E. Telescopic heat control deflector. 4,161,940, Cl. 126-59.000.
Reed, Robert D., to John Zink Company. NOx abatement in burning of gaseous or liquid fuels. 4,162,140, Cl. 431-284.000.
Reed, Ronald H., to Square D Company. Trim assembly for panelboard. 4,162,517, Cl. 361-358.000.
Reichenberger, Arthur M. Beverage dispensing system. 4,162,028, Cl. 222-129.400.
Reinhardt, Bruce A.: *See—*
Arnold, Fred E.; Reinhardt, Bruce A.; and Hedberg, Frederick L., 4,162,265, Cl. 260-578.000.
Respen, Yves J.: *See—*
Economopoulos, Mario; Respen, Yves J.; and Wilmotte, Stephane H., 4,161,800, Cl. 15-302.000.
Restle, Donald J. Picture mounting and display. 4,161,831, Cl. 40-160.000.
Rexroad, James O.: *See—*
Cellerini, Albert R.; Ricci, Louis N.; and Rexroad, James O., 4,162,467, Cl. 335-16.000.
Reynolds Metals Company: *See—*
Brooks, Carson L.; Carson, John W.; and Culbreth, Garland T., 4,161,978, Cl. 164-49.000.
Rhind, Terence K.: *See—*
Stone, Vaughn L.; Rhind, Terence K.; Andrews, Allen H.; and Hendrie, John M., 4,161,887, Cl. 73-720.000.
Ricci, David P., to United States of America, Navy. Time compression correlator. 4,162,533, Cl. 364-728.000.
Ricci, Louis N.: *See—*
Cellerini, Albert R.; Ricci, Louis N.; and Rexroad, James O., 4,162,467, Cl. 335-16.000.

Richardson, Christopher J.: *See*—
George, Allen P.; Homer, Harold; and Richardson, Christopher J., 4,162,431, Cl. 315-346.000.

Richardson, Sam M., III. Protective liner for pickup trucks. 4,162,098, Cl. 296-39.00R.

Ricoh Co., Ltd.: *See*—
Abe, Takeshi; Tsuchiya, Keishin; Saito, Kazuhito; Mizuta, Toshiaki; and Yoshihara, Ichiro, 4,162,484, Cl. 340-150.000.

Ridge, George W.: *See*—
Storm, Donald P.; and Ridge, George W., 4,161,859, Cl. 56-364.000.

Ridgway, H. C., to Telsco Industries, Inc. Rotary sprinkler impact arm spring adjustment. 4,162,038, Cl. 239-206.000.

Riebel, Hans-Jochem: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,162,310, Cl. 424-200.000.

Riha, Jerry, to Elder, Robert K. Gap setting means. 4,161,824, Cl. 33-180.0AT.

Rim, Yong S.; and Nudenberg, Walter, to Uniroyal, Inc. Nonburning, non-dripping polyurethane compositions. 4,162,276, Cl. 525-2.000.

Rinsler, Samuel J.: *See*—
Weck, Friedrich J.; Hunkins, James; and Rinsler, Samuel J., 4,162,339, Cl. 428-43.000.

Rixson-Firemark, Inc.: *See*—
D'Hooge, Richard E.; and Pasek, Frank S., 4,161,804, Cl. 16-48.500.

Robert Bosch GmbH: *See*—
Eblen, Ewald; and Hofmann, Karl, 4,162,043, Cl. 239-533.300.
Eckert, Konrad; Holzbaur, Siegfried; Wessel, Wolf; and Grieshaber, Hermann, 4,161,935, Cl. 123-139.0AW.
Greiner, Max; and Temmen, Bernhard, 4,161,964, Cl. 138-26.000.
Holzbaur, Siegfried, 4,161,932, Cl. 123-139.0AW.
Knapp, Heinrich; Greiner, Max; Peters, Klaus-Jurgen; and Jaggle, Gunther, 4,161,961, Cl. 137-501.000.
Stumpp, Gerhard, 4,161,933, Cl. 123-139.0AW.
Stumpp, Gerhard, 4,161,934, Cl. 123-139.0AW.
Zabler, Erich; Gassmann, Heiner; Schneider, Steffen; and Straub, Steffen, 4,162,083, Cl. 280-703.000.
Zillgitt, Ulrich; Kuhn, Wolfgang; and Doll, Gunther, 4,162,424, Cl. 315-82.000.

Roberts, Patrick J.; Hogan, Kevin P.; and Kealy, Thomas, to Padmore & Barnes International Limited. Articles of footwear. 4,161,827, Cl. 36-11.000.

Robertson, Kenneth D., to United States of America, Army. Non-contact velocimeter using arrays. 4,162,509, Cl. 356-28.000.

Robinson, Mark L., to Acro, Inc. Method of string attaching to game racket handle. 4,161,813, Cl. 29-460.000.

Robles, Enrique C., to Lever Brothers Company. Process for preparing colored detergent flakes. 4,162,228, Cl. 252-90.000.

Robusch, Gunter: *See*—
Buhler, Hans-Eugen; Robusch, Gunter; Schafer, Herbert; and Peters, Karl-Heinz, 4,162,061, Cl. 266-193.000.

Rockwell International Corporation: *See*—
Downen, David N.; and Eichenberger, Bert A., 4,162,496, Cl. 343-18.00A.

Rode, France; Lindes, Peter; Eschenbach, Ralph F.; and Fazarinc, Zvonko A., to Hewlett-Packard Company. Method and apparatus for programmable and remote numeric control and calibration of electronic instrumentation. 4,162,531, Cl. 364-571.000.

Rodgers, Gregg S., to Tuscan Corporation. Peak level detector. 4,162,444, Cl. 324-103.00P.

Rodriguez, Ludovic; and Marchal, Lucien, to UCB, Societe Anonyme. N-substituted lactams. 4,162,325, Cl. 424-274.000.

Rogala, John: *See*—
Clark, Carl A.; and Rogala, John, 4,162,133, Cl. 405-258.000.

Roger, Pierre: *See*—
Malen, Charles; Roger, Pierre; and Pascaud, Xavier, 4,162,322, Cl. 424-267.000.

Rollei-Werke Franke & Heidecke: *See*—
Schneider, Arthur, 4,162,439, Cl. 320-40.000.

Rolls-Royce Limited: *See*—
Jubb, Albert, 4,161,917, Cl. 110-263.000.
Parkes, Roger J., 4,162,136, Cl. 416-97.00R.

Rones, James M., to American Manufacturing Company. Porous resin impregnated stratified fiber flexible sheet backed mat and process of forming the same. 4,162,344, Cl. 428-212.000.

Rooymans, Joannes A., to Ballast-Nedam Groep N.V. Method and device for loosening stony soil. 4,162,102, Cl. 299-10.000.

Rosen, Arye: *See*—
Mawhinney, Daniel D.; Wolkstein, Herbert J.; Rosen, Arye; and Turski, Zygmond, 4,162,412, Cl. 307-237.000.

Rosen, Irving: *See*—
Li, George S.; and Rosen, Irving, 4,162,277, Cl. 525-146.000.

Rosenkranz, Hans J., to Bayer Aktiengesellschaft. Crosslinkable urethane resins containing vinyl and carboxyl groups. 4,162,274, Cl. 528-75.000.

Ross, John; and Sala-Spini, Amedeo F., to Random Electronics International Pty. Limited. Graphic display systems. 4,162,493, Cl. 340-752.000.

Royal Industries, Inc.: *See*—
Scribner, Frank F., 4,162,097, Cl. 296-190.000.

Rudolph, Ralph G., to United States Steel Corporation. Duration range determination of incursions by a variable signal. 4,162,453, Cl. 328-111.000.

Ruger, Heribert, to Siemens Aktiengesellschaft. Cooling capsule for thyristors. 4,161,980, Cl. 165-168.000.

Runyan, Walter W.: *See*—
Papa, Anthony J.; and Runyan, Walter W., 4,162,353, Cl. 521-107.000.

Ruscigno, Harry G. Detonator assembly. 4,161,797, Cl. 9-316.000.

Russell, Homer C.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.

Rybczynski, Jerzy: *See*—
Bartos, Dezso I.; and Rybczynski, Jerzy, 4,162,003, Cl. 206-219.000.

Ryobi Ltd.: *See*—
Sazaki, Kounin, 4,162,048, Cl. 242-84.20G.

Rzhevskaya, Galina F.: *See*—
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

S.W.I.S., Inc.: *See*—
Wallis, David W.; and Stewart, William H., 4,162,461, Cl. 333-174.000.

Sack, Ernst T.; Nordmeyer, Friedrich; and Kersting, Emil F., to Sack GmbH. Measuring apparatus for measuring the roll gap in gauge-controlled roll stands. 4,161,885, Cl. 73-597.000.

Sack GmbH: *See*—
Sack, Ernst T.; Nordmeyer, Friedrich; and Kersting, Emil F., 4,161,885, Cl. 73-597.000.

Saito, Katsuhide: *See*—
Murai, Hiromu; Ohata, Katsuya; Enomoto, Hiroshi; Chokai, Shoichi; Machara, Mitsuhiro; Saito, Katsuhide; and Ozaki, Takayuki, 4,162,331, Cl. 424-324.000.

Saito, Kazuhito: *See*—
Abe, Takeshi; Tsuchiya, Keishin; Saito, Kazuhito; Mizuta, Toshiaki; and Yoshihara, Ichiro, 4,162,484, Cl. 340-150.000.

Sakaue, Tatsuo; and Iwasawa, Mineo, to Tokyo Shibaura Electric Co., Ltd. Charge transfer analog processing apparatus for serial-to-parallel conversion. 4,162,411, Cl. 307-221.00D.

Sala-Spini, Amedeo F.: *See*—
Ross, John; and Sala-Spini, Amedeo F., 4,162,493, Cl. 340-752.000.

Salt, Kenneth J.; and Wintle, Colin A., to United Kingdom Atomic Energy Authority. Temperature sensors. 4,162,175, Cl. 136-233.000.

Sanders, Frederick W.: *See*—
Smith, Glen C.; and Sanders, Frederick W., 4,162,187, Cl. 162-29.000.

Sanders, Murray J. Potency and atoxicity test for modified neurotoxin. 4,162,303, Cl. 424-9.000.

Sandoz, Inc.: *See*—
Houlihan, William J., 4,162,317, Cl. 424-250.000.

Sangamo Weston, Inc.: *See*—
Becker, Dale F., 4,162,516, Cl. 361-372.000.

Sankyo Company Limited: *See*—
Hiraoka, Tetsuo; and Kobayashi, Takeo, 4,162,251, Cl. 260-239.100.
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,162,246, Cl. 260-45.8NT.

Sano, Shoichi, to Honda Giken Kogyo Kabushiki Kaisha. Wheel suspension apparatus for a vehicle. 4,162,091, Cl. 280-702.000.

Sato, Tomoyasu: *See*—
Nara, Takashi; Okachi, Ryo; Kawamoto, Isao; Sato, Tomoyasu; and Oka, Tetsuo, 4,162,305, Cl. 424-120.000.

Sauvain, Roger: *See*—
Voumard, Hugues; and Sauvain, Roger, 4,161,849, Cl. 51-215.0CP.

Sazaki, Kounin, to Ryobi Ltd. Spinning reel with adjustable bail arm return spring. 4,162,048, Cl. 242-84.20G.

Scanlan, Dennis R., Jr., to Scanlan International, Inc. Needle driver. 4,161,951, Cl. 128-340.000.

Scanlan International, Inc.: *See*—
Scanlan, Dennis R., Jr., 4,161,951, Cl. 128-340.000.

Scapa-Porritt Limited: *See*—
Ashworth, Gordon, 4,162,190, Cl. 162-359.000.

Schaber, Manfred O.: *See*—
Gass, Albert E.; Gottshall, Harry W.; Schaber, Manfred O.; and Trombino, Lawrence, 4,162,526, Cl. 364-200.000.

Schaefer, Horst: *See*—
Benseler, Hans; and Schaefer, Horst, 4,161,828, Cl. 36-32.00R.

Schaerer, Robert: *See*—
Nicolet, Rene; and Schaerer, Robert, 4,162,239, Cl. 260-29.7UP.

Schafer, Anton; and Probst, Karl, to Lindemann Maschinenfabrik GmbH. Presses for baling waste materials. 4,161,911, Cl. 100-96.000.

Schafer, Herbert: *See*—
Buhler, Hans-Eugen; Robusch, Gunter; Schafer, Herbert; and Peters, Karl-Heinz, 4,162,061, Cl. 266-193.000.

Schalch, Fred, to Fael S.A. Transport device for an electrical resistance welding machine. 4,162,382, Cl. 219-64.000.

Scharfman, Howard, to Raytheon Company. Magnetron tuning circuit. 4,162,459, Cl. 331-90.000.

Schatz, Friedrich: *See*—
Scheffler, Ernst; Schatz, Friedrich; and Ziemek, Gerhard, 4,161,966, Cl. 138-112.000.

Schaubert, Daniel H.: *See*—
Jones, Howard S., Jr.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,162,499, Cl. 343-700.0MS.

Scheele, Randall D.: *See*—
Burger, Leland L.; and Scheele, Randall D., 4,162,206, Cl. 204-94.000.

Scheffler, Ernst; Schatz, Friedrich; and Ziemek, Gerhard, to Kabel-und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Spacer for coaxial tube systems. 4,161,966, Cl. 138-112.000.
Scherer, Richard M., to Chambers Corporation. Oven liner suspension assembly. 4,161,939, Cl. 126-19.00R.
Schievelbein, Vernon H.; Kudchadker, Mohan V.; Varnon, James E.; and Whittington, Lawrence E., to Texaco Inc. High conformance enhanced oil recovery process. 4,161,982, Cl. 166-269.000.
Schievelbein, Vernon H., to Texaco Inc. High conformance oil recovery process. 4,161,983, Cl. 166-269.000.
Schintlmeister, Wilfried, to Schwarzkopf Development Corporation. Coated cemented carbide elements and their manufacture. 4,162,338, Cl. 427-249.000.
Schlichte, Max, to Siemens Aktiengesellschaft. Time-divison multiplex switching network with spatial switching stages. 4,162,375, Cl. 179-15.0AT.
Schlitt, Leland G., to United States of America, Energy. Repetitively pumped electron beam device. 4,162,432, Cl. 315-349.000.
Schmedemann, Walter: *See*—
Gieschen, Kurt; and Schmedemann, Walter, 4,162,406, Cl. 250-468.000.
Schmidt, Walter, to Swiss Aluminium Ltd. Process and device for detecting inclusions in crystals. 4,162,125, Cl. 356-30.000.
Schmitt, Robert A., to Columbia Machine, Inc. Article stacker with overhead finger rake. 4,162,016, Cl. 414-85.000.
Schmitt, Wilhelm; and Schumacher, Herbert, to Carl Freudenberg, Firma. Anti skid chain. 4,161,976, Cl. 152-239.000.
Schneider, Arthur, to Rollei-Werke Franke & Heidecke. Rapid-charging circuit. 4,162,439, Cl. 320-40.000.
Schneider, Egon: *See*—
Pohlmann, Gottfried; and Schneider, Egon, 4,161,995, Cl. 181-150.000.
Schneider, Heinz: *See*—
Jansen, Hermann; and Schneider, Heinz, 4,161,959, Cl. 137-340.000.
Schneider, Klaus-Juergen: *See*—
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.
Schneider, Kurt: *See*—
Himmele, Walter; Fischer, Karl; Kaibel, Gerd; Schneider, Kurt; and Irnich, Rudolf, 4,162,200, Cl. 203-58.000.
Schneider, Steffen: *See*—
Zabler, Erich; Gassmann, Heiner; Schneider, Steffen; and Straub, Steffen, 4,162,083, Cl. 280-703.000.
Schoellkopf, Ernst H., to Ironflex AG. Leakage protective apparatus for storage containers or the like. 4,161,957, Cl. 137-205.000.
Schopf, Jorg, to Schopf Maschinenbau GmbH. Motor-driven vehicle, especially for use in mining operations. 4,162,099, Cl. 296-63.000.
Schopf Maschinenbau GmbH: *See*—
Schopf, Jorg. 4,162,099, Cl. 296-63.000.
Schouten, Peter, to Huyck Corporation. Means and method for packaging endless fabrics. 4,162,009, Cl. 206-389.000.
Schroder, Rolf: *See*—
Maurer, Fritz; Riebel, Hans-Jochem; Schroder, Rolf; Hammann, Ingeborg; and Behrenz, Wolfgang, 4,162,310, Cl. 424-200.000.
Schultz, Karl V. Adobe wall construction. 4,161,852, Cl. 52-250.000.
Schultze, Volker; and Ayasse, Paul, to Volker Schultze Elektromechanische Apparate. Ball game apparatus comprising a frame to which a mesh or fabric is attached. 4,162,072, Cl. 273-96.00R.
Schulz, Gunter: *See*—
Hartmannsgruber, Max; Schulz, Gunter; Klein, Konrad; and Wolf, Horst, 4,161,862, Cl. 57-92.000.
Schumacher, Herbert: *See*—
Schmitt, Wilhelm; and Schumacher, Herbert, 4,161,976, Cl. 152-239.000.
Schutt, John B., to United States of America, National Aeronautics and Space Administration. Alkali-metal silicate binders and methods of manufacture. 4,162,169, Cl. 106-74.000.
Schwab, Gerhart, to Mead Corporation, The. Process for the production of microcapsular coating compositions containing pigment particles and compositions produced thereby. 4,162,165, Cl. 106-21.000.
Schwartz, Robert B., to Fruehauf Corporation. Vehicle axle suspension assembly. 4,162,090, Cl. 280-688.000.
Schwartz, William C., to Burlington Industries, Inc. Foam coated ceiling board facing and method of making the same. 4,162,342, Cl. 428-159.000.
Schwarzkopf Development Corporation: *See*—
Schintlmeister, Wilfried, 4,162,338, Cl. 427-249.000.
Schweiger, Erwin: *See*—
Huber, Manfred; Kapfhammer, Karl; Schweiger, Erwin; Jochmann, Franz; and Krappel, Alfred, 4,162,478, Cl. 340-52.00F.
Schwentker, Harald: *See*—
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.
Sciaky, Albert M., to Sciaky Bros., Inc. Sliding vacuum seal means. 4,162,391, Cl. 219-121.0EB.
Sciaky Bros., Inc.: *See*—
Sciaky, Albert M., 4,162,391, Cl. 219-121.0EB.
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Malen, Charles; Roger, Pierre; and Pascaud, Xavier, 4,162,322, Cl. 424-267.000.
Scribner, Frank F., to Royal Industries, Inc. Vehicle cab structure. 4,162,097, Cl. 296-190.000.
Sebens, Carl R.; and Fisher, Chester G., III, to Perkin-Elmer Corporation, The. Apparatus for deriving a feedback control signal in a thermal system. 4,162,379, Cl. 219-497.000.
Segers, Jacobus C., to Lever Brothers Company. Oil purification by adding hydratable phosphatides. 4,162,260, Cl. 260-424.000.
Seibert, Chesterfield F., to Pall Corporation. Multi-chamber adsorbent gas fractionator with non-jamming effluent flow control valve. 4,162,146, Cl. 55-163.000.
Seleznev, Viktor D.: *See*—
Maslyansky, Gdal N.; Rabinovich, Georgy L.; Treiger, Leonid M.; Gokhman, Boris K.; and Seleznev, Viktor D., 4,162,214, Cl. 585-471.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., to Texaco Inc. Furfural refining unit control system. 4,162,197, Cl. 196-14.520.
Servas, Francis M., to Johnson & Johnson; and Purolator. Blood filter. 4,162,220, Cl. 210-448.000.
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, to Merck Patent Gesellschaft mit Beschrankter Haftung. Ring substituted pyrazino-isoquinoline derivatives and their preparation. 4,162,319, Cl. 424-250.000.
Seubert, Jurgen: *See*—
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.
Severson, Asbjorn M., to Honeywell Inc. Method of fabricating a solar absorber panel. 4,161,809, Cl. 29-157.30D.
Seymour, Shaun A., to Sperry Rand Corporation. Quarter bale turning apparatus. 4,162,135, Cl. 414-780.000.
Shanley, John P. Container having slideable closure means. 4,162,024, Cl. 220-350.000.
Shapiro, Paul: *See*—
Broder, Alan; Shapiro, Paul; and Yee, Seening, 4,162,474, Cl. 340-6.00R.
Sharp, James D., to MAP International. Tray for x-ray film cassettes. 4,162,407, Cl. 250-468.000.
Shawl, Edward T., to Atlantic Richfield Company. Process for the preparation of diphenylmethane dicarbamates and polymethylene polyphenyl carbamates. 4,162,362, Cl. 560-25.000.
Shibahara, Tetsuya: *See*—
Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, 4,162,315, Cl. 424-250.000.
Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, to Mitsubishi Chemical Industries Limited. Agricultural fungicidal composition. 4,162,315, Cl. 424-250.000.
Shigenobu, Kouhei, to Tokyo Aircraft Instrument Co., Ltd.; and Tokyo Aircraft Instrument Co., Ltd. Turn rate indicator of aircraft using gyroscope. 4,161,884, Cl. 73-504.000.
Shimamura, Isao; and Nakamura, Yasuharu, to Fuji Photo Film Co., Ltd. Reversal color photcgraphic process. 4,162,161, Cl. 96-59.000.
Shimdada, Wataru; Machida, Kazumichi; Hoshinouchi, Susumu; Hiramoto, Seigo; and Okada, Masaru, to Mitsubishi Denki Kabushiki Kaisha. Welding apparatus. 4,162,389, Cl. 219-121.00P.
Shimizu, Kazuaki, to Nissan Motor Company, Limited. Hydraulic anti-skid device. 4,162,108, Cl. 303-115.000.
Shimizu, Masanao: *See*—
Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, 4,162,316, Cl. 424-250.000.
Shimokawa, Noriaki: *See*—
Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, 4,162,316, Cl. 424-250.000.
Shinshu Seiki Kabushiki Kaisha: *See*—
Usui, Kiyofumi; and Kodaira, Kozo, 4,161,912, Cl. 101-99.000.
Shintani, Akira: *See*—
Hino, Minoru; Yasui, Seimei; and Shintani, Akira, 4,162,240, Cl. 260-29.70B.
Shurpik, Anton: *See*—
Pearson, Dale S.; and Shurpik, Anton, 4,162,354, Cl. 525-3.000.
Siemens Aktiengesellschaft: *See*—
Deppe, Hans-Raimund, 4,162,210, Cl. 204-192.0EC.
Hebenstreit, Ernst, 4,162,539, Cl. 365-149.000.
Hirschmann, Peter; and Hoefer, Ernst, 4,162,376, Cl. 179-18.0BC.
Kruehler, Wolfgang; and Plaettner, Rolf, 4,162,184, Cl. 156-621.000.
Maringer, Albert; and Labinsky, Michael, 4,161,962, Cl. 137-557.000.
Ruger, Heribert, 4,161,980, Cl. 165-168.000.
Schlichte, Max, 4,162,375, Cl. 179-15.0AT.
Thilo, Peer; and Moser, Otto W., 4,162,489, Cl. 340-518.000.
Ticak, Friedrich; and Stut, Hans, 4,162,367, Cl. 13-1.000.
Zeuch, Klaus, 4,162,293, Cl. 422-247.000.
Sienkiewicz, Boleslaw; Meyer, William J.; and Giacone, Joseph, to General Foods Corporation. Method and apparatus for producing a meat analog. 4,162,332, Cl. 426-249.000.
Sigmund, Frantisek. Heat-insulated pipe-lines. 4,162,093, Cl. 285-47.000.
Signode Corporation: *See*—
Leslie, John H.; and Crosby, George A., 4,161,910, Cl. 100-26.000.
Silonics, Inc.: *See*—
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Singer Company, The: *See—*
Dunn, William H., 4,161,918, Cl. 112-158.00E.
Prill, Robert S., 4,162,495, Cl. 343-7.300.

Sira Societa' Industriale Ricerche Automotoristiche: *See—*
Giacosa, Dante, 4,161,894, Cl. 74-863.000.

Siverson, Harry E. Jew's harp. 4,161,902, Cl. 84-375.000.

SKF Kugellagerfabriken GmbH: *See—*
Muennich, Hermann; and Kispert, Klaus, 4,162,109, Cl. 308-216.000.

Skraba, Frank W., to Phillips Petroleum Company. Alkaline treatment of liquid propane containing HF. 4,162,273, Cl. 585-854.000.

Slater, Steven M.: *See—*
Boyer, Stephen K.; and Slater, Steven M., 4,162,207, Cl. 204-157.10R.

Smith, Donald K.: *See—*
Kirkland, Edward O., 4,162,020, Cl. 220-1.00B.

Smith, Frank G.: *See—*
Ogden, Dennis H.; and Smith, Frank G., 4,162,128, Cl. 366-154.000.

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SmithKline Corporation: *See—*
Buckley, Thomas F.; and Gleason, John G., 4,162,250, Cl. 260-239.00A.

Snyder, Wesley L. Control circuit arrangement for laser aiming system having magnetic decoupling means. 4,162,521, Cl. 362-113.000.

Societe Anonyme de Telecommunications: *See—*
Lamelot, Pierre M. L., 4,162,052, Cl. 244-3.160.

Societe Anonyme des Equipements S.E.I.M.: *See—*
Pitrat, Alain, 4,161,993, Cl. 180-90.000.

Societe des Acieries de Paris et d'Outreau: *See—*
Guillaumin, Jean-Claude, 4,161,913, Cl. 105-200.000.

Societe des Produits Chimiques et Matieres Colorantes de Mulhouse: *See—*
Durr, Louis; and Legrand, Francis, 4,162,221, Cl. 252-1.000.

Societe Internationale d'Investissements et de Participations par abreviation INTERPAR: *See—*
Noyon, Gustave M., 4,162,017, Cl. 414-313.000.

Societe Nationale d'Etude et de Construction de Moteurs d'Aviation: *See—*
Bouton, Daniel A.; Martoglio, Jean E.; and Maulat, Jean-Pierre, 4,162,064, Cl. 267-177.000.

Sokol, Vincent. Filament tensioning device for bobbins of a braiding machine, or the like. 4,161,903, Cl. 87-57.000.

Sokolov, Evgeny A.: *See—*
Peregudov, Lev V.; Malashin, Mikhail M.; Naletov, Anatoly S.; Nenakhov, Jury Y.; and Sokolov, Evgeny A., 4,162,159, Cl. 75-130.00R.

Solarex Corporation: *See—*
Lindmayer, Joseph, 4,162,177, Cl. 148-179.000.

Solod, Grigory I.: *See—*
Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., 4,162,107, Cl. 303-3.000.

Solyom, Peter; Boman, Bengt; and Bjorndal, Hakan, to Aktiebolaget Kalle-Regulatorer. Biological testing device and method of measuring toxicity of sewage. 4,162,195, Cl. 43-310.000.

Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, to Sankyo Company Limited. Hydantoin derivatives and their use as polymer stabilizers. 4,162,246, Cl. 260-45.8NT.

Somfai, Eva: *See—*
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.

Somme, Klaus: *See—*
Adrian, Renate; von Schenck, Raban; Somme, Klaus; and Weber, Hermann, 4,162,300, Cl. 423-314.000.

Sony Corporation: *See—*
Tatami, Mitsushige, 4,162,508, Cl. 358-18.000.

Sorge, John R.: *See—*
Chance, Britton; and Sorge, John R., 4,162,405, Cl. 250-461.00B.

Sorrells, Weldon B. Mop cleaning device. 4,161,799, Cl. 15-260.000.

Southall, Peter: *See—*
Jacobs, Philip F.; Friedman, Evelyn; and Southall, Peter, 4,162,026, Cl. 221-92.000.

Specker, Lawrence J.; Higgins, Aubin M.; and Brinkley, James W., to United States of America, Air Force. Head and neck impact measurement system. 4,161,874, Cl. 73-12.000.

Spector, Marshall L., to Air Products and Chemicals, Inc. High nitrogen and phosphorous content biomass produced by treatment of a BOD-containing material. 4,162,153, Cl. 71-12.000.

Speeds, John A.; and Marcy, Robert D., to United States of America, Air Force. High pressure hydrazine gas generator. 4,162,292, Cl. 422-206.000.

Sperry Rand Corporation: *See—*
Broder, Alan; Shapiro, Paul; and Yee, Seening, 4,162,474, Cl. 340-6.00R.
Osder, Stephen S., 4,162,438, Cl. 318-564.000.
Seymour, Shaun A., 4,162,135, Cl. 414-780.000.

Spirax Sarco Limited: *See—*
Golch, Peter R. B., 4,161,882, Cl. 73-368.300.

Spivey, Paul R.: *See—*
Howard, Guy J.; McCrumb, Walter C.; and Spivey, Paul R., 4,162,396, Cl. 235-304.000.

Sprague, Theodore S., to Babcock & Wilcox Company, The. Thermal sleeve. 4,161,967, Cl. 138-113.000.

Sprecker, Mark A.; and Theimer, Ernst T., to International Flavors & Fragrances Inc. Process for the production of compounds useful in perfumery. 4,162,256, Cl. 260-345.200.

Square D Company: *See—*
Reed, Ronald H., 4,162,517, Cl. 361-358.000.

Stakofsky, Charles. Handbag construction and method therefore. 4,161,975, Cl. 150-33.000.

Standard Oil Company, The: *See—*
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,162,234, Cl. 252-432.000.
Li, George S.; and Rosen, Irving, 4,162,277, Cl. 525-146.000.

Standard Products Company, The: *See—*
Dallen, John A.; and Green, Harry W., 4,161,792, Cl. 4-111.100.

Stant Manufacturing Company, Inc.: *See—*
Crute, Billy G., 4,162,021, Cl. 220-202.000.

Stapley, Edward O.: *See—*
Cassidy, Patrick J.; Goegelman, Robert T.; Stapley, Edward O.; and Hernandez, Sebastian, 4,162,324, Cl. 424-274.000.

Stapp, Paul R., to Phillips Petroleum Company. Conversion of dienes or monoolefins to diesters. 4,162,363, Cl. 560-246.000.

Star Sales Company: *See—*
Phelps, Paul S., 4,161,818, Cl. 30-157.000.

Starkweather, Gary K.; and Urbach, John C., to Xerox Corporation. Linear array modulator. 4,162,121, Cl. 350-358.000.

Stas - Societe Technique d'Accessoire Specialises: *See—*
Archer, Jean-Francois, 4,162,095, Cl. 294-74.000.

Stauffer Chemical Company: *See—*
Mihailovski, Alexander, 4,162,326, Cl. 424-283.000.
Walsh, Edward N.; and Fearing, Ralph B., 4,162,279, Cl. 260-943.000.

Stearns, Earl J. Method of and apparatus for flushing an automobile cooling system. 4,161,979, Cl. 165-95.000.

Stebleton, Leo F.: *See—*
Lee, Chi-Long; Maxson, Myron T.; and Stebleton, Leo F., 4,162,243, Cl. 260-37.0SB.

Stelzer, Harry, to Dynamit Nobel AG. Mounting disk for the fixation of loosely installed sealing sheets. 4,161,854, Cl. 52-309.100.

Sterinzat, Yakov M.: *See—*
Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., 4,162,107, Cl. 303-3.000.

Sterling Drug Inc.: *See—*
Lorenz, Roman R.; Parady, Edward D.; and Thielking, William H., 4,162,361, Cl. 546-72.000.

Stevens, Walter J., to Techni-Chem, Inc. Liquid treatment apparatus. 4,161,963, Cl. 137-592.000.

Stewart, William H.: *See—*
Wallis, David W.; and Stewart, William H., 4,162,461, Cl. 333-174.000.

Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, to BASF Aktiengesellschaft. Separation of a mixture of C_4-hydrocarbons by extractive distillation. 4,162,198, Cl. 203-23.000.

Stoepel, Kurt: *See—*
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.

Stone, Vaughn L.; Rhind, Terence K.; Andrews, Allen H.; and Hendrie, John M., to Bourns, Inc. Media independent differential pressure transducer. 4,161,887, Cl. 73-720.000.

Storm, Donald P.; and Ridge, George W., to International Harvester Company. Crop pickup device. 4,161,859, Cl. 56-364.000.

Storm, Russell F. Method and apparatus for forming an eye in cordage. 4,161,861, Cl. 57-22.000.

Strachan, Robert G.; Paleveda, William J.; Veber, Daniel F.; and Holly, Frederick W., to Merck & Co., Inc. Somatostatin analogs. 4,162,248, Cl. 260-112.50S.

Straub, Steffen: *See—*
Zabler, Erich; Gassmann, Heiner; Schneider, Steffen; and Straub, Steffen, 4,162,083, Cl. 280-703.000.

Strauss, Paul, to Miner Enterprises, Inc. Hydraulic railway car sway damper. 4,162,062, Cl. 267-8.00R.

Strehlow, Wighard: *See—*
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.

Strunc, Gerald R., to Pako Corporation. Photographic paper cutter with automatic paper feed in the event of occasional missing cut marks. 4,161,899, Cl. 83-371.000.

Stubbs, John K.: *See—*
Acheson, Richard M.; Cox, Ian R.; Stubbs, John K.; and Penrose, Alexander B., 4,162,253, Cl. 260-306.70T.

Stuitje, Cornelis C., to Detecta-Kraan B.V. Apparatus for measuring the alcohol percentage in the breath of an examinee. 4,161,875, Cl. 73-23.000.

Stumpp, Gerhard, to Robert Bosch GmbH. Mixture control apparatus for internal combustion engines. 4,161,933, Cl. 123-139.0AW.

Stumpp, Gerhard, to Robert Bosch GmbH. Apparatus to control the composition of the operating mixture of an internal combustion engine. 4,161,934, Cl. 123-139.0AW.

Stut, Hans: *See*—
Ticak, Friedrich; and Stut, Hans, 4,162,367, Cl. 13-1.000.

Stutz, William H., Jr. Fishing reel apparatus. 4,162,049, Cl. 242-84.50R.

Su, Chauchang, to Burroughs Corporation. Pre-processing and feature extraction system for character recognition. 4,162,482, Cl. 340-146.30H.

Subbanna, Somanahalli N.; Morgan, Thomas R.; and Frick, Douglas G., to Allied Chemical Corporation. Method for production of alkali metal chromates from chrome ores. 4,162,295, Cl. 423-61.000.

Subelka, John C., to Johnson & Johnson. Coating for gold or gold alloy castings for dental bridges and crowns. 4,162,163, Cl. 106-1.130.

Suchko, Adam J.: *See*—
Beyers, Billy W., Jr.; and Suchko, Adam J., 4,162,513, Cl. 358-191.000.

Suganuma, Yoji: *See*—
Yanagisawa, Masahiro; and Suganuma, Yoji, 4,162,350, Cl. 428-633.000.

Sumitomo Chemical Company, Limited: *See*—
Hino, Minoru; Yasui, Seimei; and Shintani, Akira, 4,162,240, Cl. 260-29.70B.
Juzu, Shigeru; Okazaki, Hiroyuki; and Suzuki, Yasuyuki, 4,162,348, Cl. 428-474.000.
Mizutani, Massto; Higo, Akio; Ohno, Nobuo; and Hirai, Hajime, 4,162,269, Cl. 260-600.00R.

Summers, Rodney. Copyholding device. 4,162,055, Cl. 248-441.00R.

Summersby, E. John. Computer tape reel handling device. 4,162,031, Cl. 224-45.00K.

Sundstrand Data Control, Inc.: *See*—
Lukes, Henry J., 4,162,456, Cl. 330-69.000.

Suntech, Inc.: *See*—
Norton, Richard V., 4,162,341, Cl. 428-117.000.

Suresh, Dev D.: *See*—
Grasselli, Robert K.; Suresh, Dev D.; and Hardman, Harley F., 4,162,234, Cl. 252-432.000.

Sutula, Raymond A.; and Wang, Frederick E., to United States of America, Navy. Battery with boron-lithium alloy anode. 4,162,352, Cl. 429-29.000.

Suzuki, Kunitomo: *See*—
Higo, Moriaki; Toda, Haruhiko; Suzuki, Kunitomo; and Nishida, Yasukuni, 4,162,258, Cl. 260-348.110.

Suzuki, Seigo; and Eguchi, Seiji, to Tokyo Shibaura Electric Co., Ltd. Interruption control system in a multiprocessing system. 4,162,529, Cl. 364-200.000.

Suzuki, Yasuyuki: *See*—
Juzu, Shigeru; Okazaki, Hiroyuki; and Suzuki, Yasuyuki, 4,162,348, Cl. 428-474.000.

Swacars Sales, Inc.: *See*—
Bond, Ronald L.; Daughdrill, E. Chris; Brice, Henry T.; and Horton, Phineas E., III, 4,162,086, Cl. 280-425.00R.

Swanson, Carl I.: *See*—
Facchini, Enio; and Swanson, Carl I., 4,162,485, Cl. 340-289.000.

Swenson, William J., to Raymond International, Inc. Apparatus and method for locking load supporting structures together. 4,161,807, Cl. 24-263.0SW.

Swiss Aluminium Ltd.: *See*—
Borer, Werner J.; Kugler, Tibor; and Zuzak, Tomas, 4,162,283, Cl. 264-15.000.
Schmidt, Walter, 4,162,125, Cl. 356-30.000.

Systems Consultants, Inc.: *See*—
Ingber, Jack F., 4,162,373, Cl. 179-1.00C.

Takabatake, Yoshinobu, to Nippondenso Co., Ltd. Generator unit with built-in thermally protected voltage regulator. 4,162,414, Cl. 310-68.00R.

Takahashi, Akio: *See*—
Takeyama, Tetsu; Takahashi, Akio; Matsumura, Kiichiro; and Kitagawa, Keiya, 4,162,299, Cl. 423-242.000.

Takei, Sakae, to Tokyo Shibaura Electric Co., Ltd. Semiconductor integrated circuit device with dual thickness poly-silicon wiring. 4,162,506, Cl. 357-59.000.

Takeyama, Tetsu; Takahashi, Akio; Matsumura, Kiichiro; and Kitagawa, Keiya, to Toray Engineering Co., Ltd. Process for the removal of sulfur oxides. 4,162,299, Cl. 423-242.000.

Tan, Marshall: *See*—
Jones, Rufus S., Jr.; Tan, Marshall; and Choe, Eui W., 4,162,346, Cl. 428-364.000.

Tanabashi, Isao, to NGK Insulators, Ltd. Method for producing a ceramic honeycomb structure having no cracks. 4,162,285, Cl. 264-66.000.

Tarasova, Raisa I.: *See*—
Razumov, Alexandr I.; Tarasova, Raisa I.; Nikolaeva, Valentina G.; and Yafarova, Rimma L., 4,162,264, Cl. 260-558.00H.
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

Tatami, Mitsushige, to Sony Corporation. Synchronizing signal generator for PAL-TV signal processing system. 4,162,508, Cl. 358-18.000.

Teague, Kenneth W.; and Graham, Kenneth A., to Chrysler Corporation. Throttle body assembly. 4,161,928, Cl. 123-102.000.

Techni-Chem, Inc.: *See*—
Stevens, Walter J., 4,161,963, Cl. 137-592.000.

Telecommunications Radioelectriques et Telephoniques TRT: *See*—
Baudoux, Jean-Pierre; and Macchi, Cesar D., 4,162,378, Cl. 179-170.200.

Teledyne Industries, Inc.: *See*—
Walker, Henry V., 4,161,901, Cl. 84-115.000.

Telsco Industries, Inc.: *See*—
Ridgway, H. C., 4,162,038, Cl. 239-206.000.

Temmen, Bernhard: *See*—
Greiner, Max; and Temmen, Bernhard, 4,161,964, Cl. 138-26.000.

Teshirogi, Toshihiko; and Tsuruta, Sumio, to Cybernet Electronic Corporation. Frequency synthesis method for an AM-SSB transmitter-receiver. 4,162,447, Cl. 325-18.000.

Tetenborg, Konrad: *See*—
Achelpohl, Fritz; Tetenborg, Konrad; and Feldkamper, Richard, 4,162,025, Cl. 221-72.000.

Teukros A.G.: *See*—
Markessini, Andrew C., 4,162,178, Cl. 156-62.200.

Texaco Development Corporation: *See*—
Marquis, Edward T.; and Waddill, Harold G., 4,162,358, Cl. 528-120.000.
Park, Jack H., 4,161,981, Cl. 166-261.000.

Texaco Inc.: *See*—
Pitts, Robert W., Jr., 4,162,400, Cl. 250-256.000.
Schievelbein, Vernon H.; Kudchadker, Mohan V.; Varnon, James E.; and Whittington, Lawrence E., 4,161,982, Cl. 166-269.000.
Schievelbein, Vernon H., 4,161,983, Cl. 166-269.000.
Sequeira, Avilino, Jr.; Begnaud, John D.; and Barger, Frank L., 4,162,197, Cl. 196-14.520.

Texas Instruments Incorporated: *See*—
Ash, Darrell L., 4,162,451, Cl. 325-451.000.
Ash, Darrell L., 4,162,452, Cl. 325-373.000.
Cochran, Michael J., 4,162,446, Cl. 325-15.000.
Hopper, George S., 4,162,402, Cl. 250-332.000.

Textron Inc.: *See*—
Carey, Lee F., 4,162,040, Cl. 239-265.330.

Th. Goldschmidt AG: *See*—
Muller, Wolfgang; Witzke, Lothar; and Gottfried, Werner, 4,162,296, Cl. 423-139.000.
Witzke, Lothar; and Muller, Wolfgang, 4,162,294, Cl. 423-24.000.

Thame, Neville G.: *See*—
Canter, Nathan H.; and Thame, Neville G., 4,162,241, Cl. 260-30.80R.

Thanawalla, Chandrakant B., to Pennwalt Corporation. Aseptic connector. 4,161,949, Cl. 128-247.000.

Theimer, Ernst T.: *See*—
Sprecker, Mark A.; and Theimer, Ernst T., 4,162,256, Cl. 260-345.200.

Thielking, William H.: *See*—
Lorenz, Roman R.; Parady, Edward D.; and Thielking, William H., 4,162,361, Cl. 546-72.000.

Thilo, Peer; and Moser, Otto W., to Siemens Aktiengesellschaft. Fire alarm system comprising a plurality of alarms which may be operated by way of an alarm loop. 4,162,489, Cl. 340-518.000.

Thomas, Herbert: *See*—
Seubert, Jurgen; Pohlke, Rolf; Thomas, Herbert; and Andrews, Peter, 4,162,319, Cl. 424-250.000.

Thomas, William E., to Phillips Petroleum Company. Carrying case. 4,162,004, Cl. 206-349.000.

Thompson, John A.: *See*—
Abbott, Jerry J.; Bernardelli, William J.; Thompson, John A.; and Caudill, Allison H., 4,161,923, Cl. 118-658.000.

Thompson, Thomas H.: *See*—
Kennedy, Thomas E.; and Thompson, Thomas H., 4,161,868, Cl. 62-256.000.

Thomson, William B. Golf putter. 4,162,074, Cl. 273-175.000.

Thornburg, David D., to Xerox Corporation. Thin film programmable read-only memory having transposable input and output lines. 4,162,538, Cl. 365-96.000.

Thornley, Derek, to Lucas Industries Limited. Manually or electrically operable electrical switch. 4,162,468, Cl. 335-106.000.

Thune-Eureka A/S: *See*—
Bjerke, Leiv, 4,162,137, Cl. 417-405.000.

Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See*—
Buhler, Hans-Eugen; Robusch, Gunter; Schafer, Herbert; and Peters, Karl-Heinz, 4,162,061, Cl. 266-193.000.

Ticak, Friedrich; and Stut, Hans, to Siemens Aktiengesellschaft. Method of crucible-freeze zone-melting a semiconductor rod and apparatus for carrying out the method. 4,162,367, Cl. 13-1.000.

Tioxide Group Limited: *See*—
George, Allen P.; Homer, Harold; and Richardson, Christopher J., 4,162,431, Cl. 315-346.000.

Tobias, Jaromir, to American Hydraulic Propulsion Systems, Inc. Radial pistion pump or motor having improved porting. 4,161,906, Cl. 91-498.000.

Toda, Haruhiko: *See*—
Higo, Moriaki; Toda, Haruhiko; Suzuki, Kunitomo; and Nishida, Yasukuni, 4,162,258, Cl. 260-348.110.

Toda, Minoru; Osaka, Susumu; and Matsumoto, Yasushi, to RCA Corporation. Velocity correction system for video disc player. 4,162,511, Cl. 358-128.000.

Tokyo Aircraft Instrument Co., Ltd.: *See*—
Shigenobu, Kouhei, 4,161,884, Cl. 73-504.000.

Shigenobu, Kouhei, 4,161,884, Cl. 73-504.000.

Tokyo Shibaura Electric Co., Ltd.: *See—*
Endoh, Kenjiro; Kitagawa, Kazuo; and Kira, Hideshi, 4,162,462, Cl. 333-14.000.
Sakaue, Tatsuo; and Iwasawa, Mineo, 4,162,411, Cl. 307-221.00D.
Suzuki, Seigo; and Eguchi, Seiji, 4,162,529, Cl. 364-200.000.
Takei, Sakae, 4,162,506, Cl. 357-59.000.

Tolmer, Richard G., to Tolmer, Suzanne G., a part interest. Tractor grader. 4,161,987, Cl. 172-791.000.

Tolmer, Suzanne G.: *See—*
Tolmer, Richard G., 4,161,987, Cl. 172-791.000.

Tomassen, Gerhardus T. H.: *See—*
Potma, Theodorus H.; and Tomassen, Gerhardus T. H., 4,162,503, Cl. 346-163.000.

Tomida, Masayuki: *See—*
Shigematsu, Taichiro; Shibahara, Tetsuya; Nakazawa, Makoto; Tomida, Masayuki; and Munakata, Toshio, 4,162,315, Cl. 424-250.000.

Tomlin, Robert L.: *See—*
Laird, James C.; and Tomlin, Robert L., 4,161,883, Cl. 73-421.50A.

Toray Engineering Co., Ltd.: *See—*
Takeyama, Tetsu; Takahashi, Akio; Matsumura, Kiichiro; and Kitagawa, Keiya, 4,162,299, Cl. 423-242.000.

Torok, Zoltan: *See—*
Knoll, Jozsef; Ecsery, Zoltan; Hermann nee Voros, Judit; Torok, Zoltan; Somfai, Eva; and Bernath, Gabor, 4,162,327, Cl. 424-285.000.

Torrington Company, The: *See—*
Gardella, Cameron G., 4,162,110, Cl. 308-234.000.

Toyo Pulp Co., Ltd.: *See—*
Hanaya, Morimasa, 4,161,972, Cl. 144-176.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Nohira, Hidetaka; Kobashi, Kiyoshi; and Nakano, Jiro, 4,161,929, Cl. 123-119.00A.
Ushijima, Fmihiro; and Fukumura, Kagenori, 4,161,895, Cl. 74-867.000.

Tran, Duc T., to C.G.R. MeV. Linear accelerators of charged particles. 4,162,423, Cl. 315-5.410.

TRE Corporation: *See—*
Wyler, Leopold S., 4,162,486, Cl. 340-310.00A.

Treiger, Leonid M.: *See—*
Maslyansky, Gdal N.; Rabinovich, Georgy L.; Treiger, Leonid M.; Gokhman, Boris K.; and Seleznev, Viktor D., 4,162,214, Cl. 585-471.000.

Trenkov, Svetoslav R.: *See—*
Nedyalkov, Ivan P.; Kanchev, Kancho T.; and Trenkov, Svetoslav R., 4,162,409, Cl. 290-53.000.

Trimble, Richard C. Fire escape device. 4,161,998, Cl. 182-190.000.

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Gass, Albert E.; Gottshall, Harry W.; Schaber, Manfred O.; and Trombino, Lawrence, 4,162,526, Cl. 364-200.000.

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Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.

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Mawhinney, Daniel D.; Wolkstein, Herbert J.; Rosen, Arye; and Turski, Zygmond, 4,162,412, Cl. 307-237.000.

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Rodgers, Gregg S., 4,162,444, Cl. 324-103.00P.

Tuso, Michael J.: *See—*
Carson, Andrew B., Jr.; and Tuso, Michael J., 4,162,131, Cl. 400-124.000.

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Kennedy, Thomas E.; and Thompson, Thomas H., 4,161,868, Cl. 62-256.000.

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Rodriguez, Ludovic; and Marchal, Lucien, 4,162,325, Cl. 424-274.000.

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Elam, Richard C.; and Ulion, Nicholas E., 4,162,349, Cl. 428-614.000.

Union Carbide Corporation: *See—*
Brown, Harry J.; and Chopra, Kuldip S., 4,162,392, Cl. 219-146.510.
Cox, Carl V., 4,162,078, Cl. 277-102.000.
Curlis, Horace E., Jr., 4,162,518, Cl. 361-433.000.
Ellgen, Paul C.; and Bhasin, Madan M., 4,162,262, Cl. 260-449.00R.
Hamling, Bernard H., 4,162,301, Cl. 423-440.000.
Kaplan, Leonard, 4,162,261, Cl. 260-449.00L.
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Papa, Anthony J.; and Runyan, Walter W., 4,162,353, Cl. 521-107.000.
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Uniroyal, Inc.: *See—*
Rim, Yong S.; and Nudenberg, Walter, 4,162,276, Cl. 525-2.000.

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Cheney, William A., 4,162,144, Cl. 55-5.000.

United Kingdom Atomic Energy Authority: *See—*
Brown, Michael H.; and Myatt, John, 4,162,369, Cl. 136-202.000.
Salt, Kenneth J.; and Wintle, Colin A., 4,162,175, Cl. 136-233.000.

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Air Force: *See—*
Arnold, Fred E.; Reinhardt, Bruce A.; and Hedberg, Frederick L., 4,162,265, Cl. 260-578.000.
Eden, Richard C.; and Nakano, Kenichi, 4,162,203, Cl. 204-38.00R.
Hutta, Joseph J.; and Quinlan, Kenneth P., 4,161,826, Cl. 34-12.000.
King, James P., 4,162,222, Cl. 252-32.70E.
Specker, Lawrence J.; Higgins, Aubin M.; and Brinkley, James W., 4,161,874, Cl. 73-12.000.
Speeds, John A.; and Marcy, Robert D., 4,162,292, Cl. 422-206.000.

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Jacobi, John H.; and Larsen, Lawrence E., 4,162,500, Cl. 343-772.000.
Jones, Howard S., Jr.; Farrar, Frederick G.; and Schaubert, Daniel H., 4,162,499, Cl. 343-700.0MS.
Lough, Lewis E., 4,161,835, Cl. 42-1.00A.
Robertson, Kenneth D., 4,162,509, Cl. 356-28.000.

Energy: *See—*
Burger, Leland L.; and Scheele, Randall D., 4,162,206, Cl. 204-94.000.
Cooke, Chathan M., 4,162,227, Cl. 252-63.500.
Doss, James D.; Cowan, Robert E.; Newell, Robert H.; and McCabe, Charles W., 4,161,950, Cl. 128-303.140.
Ehrenkaufer, Richard L. E.; Wolf, Alfred P.; and Hembree, Wylie C., 4,162,142, Cl. 260-326.200.
Holladay, David W.; and Haag, Gary L., 4,162,298, Cl. 423-230.000.
Horwitz, E. Philip; Delphin, Walter H.; and Mason, George W., 4,162,230, Cl. 252-301.10W.
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Hwang, Sun-Keun; and Morris, John W., Jr., 4,162,158, Cl. 75-124.000.
King, Wayne E.; and Merkle, Karl L., 4,162,401, Cl. 250-311.000.
Parker, Earl R.; Zackay, Victor F.; Bhat, Manjeshwar S.; and Garrison, Warren M., Jr., 4,162,157, Cl. 75-124.000.
Schlitt, Leland G., 4,162,432, Cl. 315-349.000.

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Schutt, John B., 4,162,169, Cl. 106-74.000.

Navy: *See—*
Bucaro, Joseph A.; Carome, Edward F.; and Dardy, Henry D., 4,162,397, Cl. 250-199.000.
Feldman, Sidney; and Barton, George G., Jr., 4,162,124, Cl. 356-4.000.
Hulland, Burton L.; and Weinstein, Arnold P., 4,162,497, Cl. 343-100.0LE.
Ricci, David P., 4,162,533, Cl. 364-728.000.
Sutula, Raymond A.; and Wang, Frederick E., 4,162,352, Cl. 429-29.000.

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Gieschen, Kurt; and Schmedemann, Walter, 4,162,406, Cl. 250-468.000.
Gross, Ulrich, 4,162,372, Cl. 179-1.00J.
Jansson, Leonard E., 4,162,524, Cl. 363-56.000.
Potma, Theodorus H.; and Tomassen, Gerhardus T. H., 4,162,503, Cl. 346-163.000.
van Hattum, Johannes S. A.; van Veen, Engelbertus S. P.; and Dorn, Wilhelmus M., 4,162,433, Cl. 315-411.000.

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Rudolph, Ralph G., 4,162,453, Cl. 328-111.000.

United Technologies Corporation: *See*—
Crow, David E.; and Harrison, Nathan E., 4,162,077, Cl. 277-53.000.
Elam, Richard C.; and Ulion, Nicholas E., 4,162,349, Cl. 428-614.000.

University of Illinois Foundation: *See*—
Hunsinger, Bill J.; and Hanma, Kentaro, 4,162,465, Cl. 333-151.000.
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Universo S.A.: *See*—
Grudzinski, Richard, 4,162,417, Cl. 310-21.000.

Uno, Hitoshi: *See*—
Nishimura, Haruki; Uno, Hitoshi; Natsuka, Kagayaki; Shimokawa, Noriaki; Shimizu, Masanao; and Nakamura, Hideo, 4,162,316, Cl. 424-250.000.

UOP Inc.: *See*—
Maffet, Vere, 4,161,825, Cl. 34-12.000.

Urbach, John C.: *See*—
Starkweather, Gary K.; and Urbach, John C., 4,162,121, Cl. 350-358.000.

Ushijima, Fmihiro; and Fukumura, Kagenori, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 4,161,895, Cl. 74-867.000.

Usui, Kiyofumi; and Kodaira, Kozo, to Shinshu Seiki Kabushiki Kaisha; and Kabushiki Kaisha Suwa Seikosha. Miniature printer. 4,161,912, Cl. 101-99.000.

Utasi, Joseph G., to Dresser Industries, Inc. Drilling mud level measurement. 4,162,473, Cl. 340-1.00L.

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Kirjavainen, Alvi, 4,162,189, Cl. 162-337.000.

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van Hattum, Johannes S. A.; van Veen, Engelbertus S. P.; and Dorn, Wilhelmus M., to U.S. Philips Corporation. Circuit arrangement including a line deflection circuit. 4,162,433, Cl. 315-411.000.

Van Peppen, Jan F.: *See*—
Fisher, William B.; and Van Peppen, Jan F., 4,162,267, Cl. 260-586.00P.

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Varmuza, Milan J., to Avalanche Limited. Adjustable table. 4,161,915, Cl. 108-144.000.

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Vater, Wulf: *See*—
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, 4,162,321, Cl. 424-266.000.

Vautrain, Lucien H., to Phillips Petroleum Company. Safer production of dry liquid propane substantially free from HF and organic fluoride. 4,162,272, Cl. 62-24.000.

VDO Adolf Schindling AG: *See*—
Collonia, Harald, 4,161,994, Cl. 180-179.000.

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Strachan, Robert G.; Paleveda, William J.; Veber, Daniel F.; and Holly, Frederick W., 4,162,248, Cl. 260-112.50S.

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McCain, William B.; Cosgrove, James F.; Vente, John; and Flavin, Thomas R., 4,162,066, Cl. 270-54.000.

Verdol, SA.: *See*—
Neyraud, Rene, 4,161,969, Cl. 139-90.000.

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Kogler, Peter; and Zitz, Alfred J., 4,162,104, Cl. 299-75.000.

Victor Company of Japan, Limited: *See*—
Kayanuma, Kanji, 4,162,398, Cl. 250-205.000.

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Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.

Vinals, Joaquin F.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.

Vish Chimiko-Technologicheski Institute: *See*—
Grancharov, Ivan N.; Tudjarova, Fanka D.; Bakalova, Yovka P.; Pelovski, Yoncho G.; Videnov, Nikola B.; and Dombalov, Ivan P., 4,162,170, Cl. 106-109.000.

Vock, Manfred H.: *See*—
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., 4,162,335, Cl. 426-535.000.

Vogel, Uriel. Engine parameter modulation. 4,161,926, Cl. 123-32.0EA.

Volckaert, Leonard: *See*—
Hentschel, Claus; Martin, Karl; and Volckaert, Leonard, 4,161,844, Cl. 47-62.000.

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Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.

Volker Schultze Elektro-mechanische Apparate: *See*—
Schultze, Volker; and Ayasse, Paul, 4,162,072, Cl. 273-96.00R.

Volsky, Bill V. Audio frequency ionization ignition system. 4,161,936, Cl. 123-148.00E.

von Daehne, Welf; and Rasmussen, Poul R., to Leo Pharmaceutical Products Ltd. A/S (Lovens Kemiske fabrik Produktionsaktiensel-skab). Fusidic acid derivatives. 4,162,259, Cl. 260-397.100.

von Schenck, Raban: *See*—
Adrian, Renate; von Schenck, Raban; Somme, Klaus; and Weber, Hermann, 4,162,300, Cl. 423-314.000.

Voumard, Hugues; and Sauvain, Roger, to Voumard Machines Co. Auxiliary workpiece-loading and -unloading apparatus. 4,161,849, Cl. 51-215.0CP.

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Voumard, Hugues; and Sauvain, Roger, 4,161,849, Cl. 51-215.0CP.

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Bazilevich, Gennady S.; Gorin, Alexandr F.; Lozinsky, Vladimir N.; Lysenko, Vladimir I.; Nosach, Vladimir M.; Solod, Grigory I.; and Sterinzat, Yakov M., 4,162,107, Cl. 303-3.000.

Vulcan Materials Company: *See*—
Wilson, Harold P.; and Bradbury, Walter C., 4,162,205, Cl. 204-43.00S.

W. Schlafhorst & Co.: *See*—
Kupper, Wilhelm, 4,162,012, Cl. 209-662.000.

Waddill, Harold G.: *See*—
Marquis, Edward T.; and Waddill, Harold G., 4,162,358, Cl. 528-120.000.

Wagner, Kenneth E., to Carton-Craft Corp. Cutout display device. 4,161,833, Cl. 40-539.000.

Wagner, Ulrich: *See*—
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.

Wagner, William A.; and Kotzur, Frank W., to Windings, Inc. Outside payoff. 4,162,050, Cl. 242-163.000.

Wahlig, Helmut: *See*—
Gottschlich, Rudolf; Gericke, Rolf; Juraszyk, Horst; Seubert, Jurgen; Strehlow, Wighard; Wahlig, Helmut; Bergmann, Rolf; and Dingeldein, Elvira, 4,162,314, Cl. 424-246.000.

Wakeman, Alden H., to Crepaco, Inc. Ultrahigh temperature heating system. 4,161,909, Cl. 99-453.000.

Wakeman, Alden H.; and Heiliger, Leonard R., to Crepaco, Inc. Dasher assembly. 4,162,127, Cl. 366-149.000.

Walden, Jack M.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.

Waldman, Richard C.: *See*—
Rasmussen, Jerome J. M.; Waldman, Richard C.; and Oliver, Richard L., 4,161,968, Cl. 138-118.100.

Waldorf, Lindsey E.; and Monroe, Kenneth E., to Waldorf, Lindsey E. Motor speed controller. 4,162,436, Cl. 318-139.000.

Walker, Henry V., to Teledyne Industries, Inc. Dynamically adaptive player piano roll to magnetic tape formating system and playback. 4,161,901, Cl. 84-115.000.

Wallis, David W.; and Stewart, William H., to S.W.I.S., Inc. Apparatus for extracting the fundamental frequency from a complex audio wave form. 4,162,461, Cl. 333-174.000.

Walls-Muycelo, Jose. Porous, lightweight, particulate aggregates and process of manufacture. 4,162,166, Cl. 106-40.00R.

Walsh, Edward N.; and Fearing, Ralph B., to Stauffer Chemical Company. Phosphonoxycarboxamides. 4,162,279, Cl. 260-943.000.

Walter Kidde and Company, Inc.: *See*—
Facchini, Enio; and Swanson, Carl I., 4,162,485, Cl. 340-289.000.

Walther, William D., to Dayton Walther Corporation. Base flanged tire carrying rims, wheels and fastening assemblies. 4,162,105, Cl. 301-12.00R.

Wang, Frederick E.: *See*—
Sutula, Raymond A.; and Wang, Frederick E., 4,162,352, Cl. 429-29.000.

Ward, Alfred G.: *See*—
Fish, Barry M; and Ward, Alfred G., 4,162,071, Cl. 273-33.000.

Ward, Gerald G., to International Harvester Company. Plow and plow mounting bracket therefor. 4,161,986, Cl. 172-266.000.

Ward, Russell L. Swivel device for supporting a balanced or semi-balanced fishing rod and indicating when a fish strikes. 4,161,839, Cl. 43-17.000.

Wasagchemie GmbH: *See*—
Lehmann, Kurt, 4,162,116, Cl. 339-60.00M.

Wasserstein, Linda J.: *See*—
Crandall, William B.; and Wasserstein, Linda J., 4,162,334, Cl. 426-505.000.

Watkins, Fred E., to Camco, Incorporated. High and low tubing pressure actuated well safety valve. 4,161,960, Cl. 137-458.000.

Watkins, Fred E., to Camco, Incorporated. Well locking device and method. 4,161,984, Cl. 166-315.000.

Watson, Robert E.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.

Wayser, Alain. Shoes intended for playing golf. 4,161,829, Cl. 36-127.000.

Webb, Robert. Combination mirror/hair dryer. 4,161,955, Cl. 132-9.000.

Weber, Hermann: *See*—
Adrian, Renate; von Schenck, Raban; Somme, Klaus; and Weber, Hermann, 4,162,300, Cl. 423-314.000.

Weck, Friedrich J.; Hunkins, James; and Rinsler, Samuel J. Newsprint coupon separator. 4,162,339, Cl. 428-43.000.
Weed Eater, Inc.: *See*—
Moore, James L., 4,161,820, Cl. 30-276.000.
Wehinger, Egbert; Bossert, Friedrich; Meyer, Horst; Franckowiak, Gerhard; Vater, Wulf; Heise, Arend; Kazda, Stanislav; and Stoepel, Kurt, to Bayer Aktiengesellschaft. Sulphur-containing amino-dihydropyridines, and their use as medicants. 4,162,321, Cl. 424-266.000.
Weinstein, Arnold P.: *See*—
Hulland, Burton L.; and Weinstein, Arnold P., 4,162,497, Cl. 343-100.0LE.
Weiss, Kenneth; and Fieder, Martin, to A. R. Nelson Co., Inc. Resilient wall protector. 4,161,853, Cl. 52-288.000.
Weitz, Hans-Martin: *See*—
Stockburger, Dieter; Volkamer, Klaus; Bender, Detlef; Schneider, Klaus-Juergen; Schwentker, Harald; Wagner, Ulrich; and Weitz, Hans-Martin, 4,162,198, Cl. 203-23.000.
Welker, Scott D. Shelter. 4,161,924, Cl. 119-19.000.
Wenninger, Fred, Jr.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.
Werner H.K. Peters Maschinenfabrik G.m.b.H.: *See*—
Wittstock, Gerhard, 4,161,808, Cl. 29-33.00R.
Wesley, John G., to Labelette Company. Labeling machine for applying labels to polygonal containers. 4,162,182, Cl. 156-487.000.
Wessel, Wolf: *See*—
Eckert, Konrad; Holzbaur, Siegfried; Wessel, Wolf; and Griesshaber, Hermann, 4,161,935, Cl. 123-139.0AW.
West, Clarence W. Variable air flow oven. 4,162,141, Cl. 432-144.000.
Western Electric Company, Incorporated: *See*—
Pavlas, Emil P., 4,162,034, Cl. 228-37.000.
Westinghouse Electric Corp.: *See*—
Arcella, Frank G.; Wolf, Charles B.; and Fey, Maurice G., 4,162,291, Cl. 422-198.000.
Bhalla, Ranbir S., 4,162,151, Cl. 65-42.000.
Bould, Fred; and Kowalik, Peter M., 4,162,385, Cl. 200-153.0SC.
Cadoff, Laurence H.; Mattox, Douglas M.; and Elms, Robert T., 4,162,430, Cl. 315-309.000.
Cellerini, Albert R.; Ricci, Louis N.; and Rexroad, James O., 4,162,467, Cl. 335-16.000.
Doby, William P., 4,162,051, Cl. 242-201.000.
Elms, Robert T., 4,162,428, Cl. 315-284.000.
Elms, Robert T.; and Engel, Joseph C., 4,162,429, Cl. 315-284.000.
Hirayama, Chikara; and Brecher, Lee E., 4,162,302, Cl. 423-579.000.
McCalmont, David, 4,162,008, Cl. 206-590.000.
Petro, James, 4,162,152, Cl. 65-164.000.
Weston, George O., to John Wyeth & Brother Limited. Process for preparing 3-[(benzamidopiperid-1-yl)alkyl] indoles. 4,162,252, Cl. 546-201.000.
Westwood, William D.: *See*—
Cielo, Paolo; and Westwood, William D., 4,162,502, Cl. 346-140.00R.
Whang, Uoo S. Center of curvature. 4,161,846, Cl. 51-33.00W.
Whang, Uoo S., to New Asian Corporation. Apparatus and method for performing aspherical operations on a workpiece. 4,161,847, Cl. 51-33.00W.
Wheelabrator-Frye Inc.: *See*—
Jones, George F., 4,161,848, Cl. 51-163.200.
Whirlpool Corporation: *See*—
Burke, Harry D., 4,162,380, Cl. 219-10.55F.
Whitfield, Thomas M.: *See*—
Hunt, Leslie; Nicolson, Ian T.; and Whitfield, Thomas M., 4,162,288, Cl. 264-75.000.
Whitson, Donald W., to All Phase Electronics, Inc. Electronic controls for automatically operating a cattle dipping vat. 4,161,925, Cl. 119-158.000.
Whittington, Lawrence E.: *See*—
Schievelbein, Vernon H.; Kudchadker, Mohan V.; Varnon, James E.; and Whittington, Lawrence E., 4,161,982, Cl. 166-269.000.
Wideman, Lawson G., to Goodyear Tire & Rubber Company, The. Selective hydrogenation of cyclopentadiene to form cyclopentene using Raney nickel catalyst and alcohols boiling above 95° C. in the reaction mixture. 4,162,271, Cl. 585-274.000.
Wiezer, Hartmut: *See*—
Mayer, Norbert; Pfahler, Gerhard; and Wiezer, Hartmut, 4,162,247, Cl. 260-45.9NC.
Wilcox, Forrest S.; Pinsky, Jules; and Cooper, Scott A., to Mearl Corporation, The. Multilayer light-reflecting film. 4,162,343, Cl. 428-212.000.
Wilkinson, Samuel, to Burroughs Wellcome Co. Method for anaesthesia by use of a pentapeptide. 4,162,307, Cl. 424-177.000.
Will Ross Inc.: *See*—
Byrne, John R., 4,162,138, Cl. 425-125.000.
Williams, Donald D. Pole building door lock. 4,162,094, Cl. 292-288.000.
Williams, Guy H., Jr.: *See*—
Henderson, Gary A.; and Williams, Guy H., Jr., 4,162,515, Cl. 361-232.000.
Williams, Ralph P.: *See*—
Gragson, James T.; and Williams, Ralph P., 4,162,223, Cl. 252-33.200.
Wilmotte, Stephane H.: *See*—
Economopoulos, Mario; Respen, Yves J.; and Wilmotte, Stephane H., 4,161,800, Cl. 15-302.000.
Wilson, David R., to International Business Machines Corporation. Magnetic diskette magazine. 4,162,006, Cl. 206-444.000.
Wilson, David R.: *See*—
Bothun, Maynard E.; Larson, Curtis A.; Lightner, Gayland E.; and Wilson, David R., 4,162,007, Cl. 206-444.000.
Wilson, Harold P.; and Bradbury, Walter C., to Vulcan Materials Company. Method of electroplating tin and alkaline electroplating bath therefor. 4,162,205, Cl. 204-43.00S.
Wilson, Richard A.; Mookherjee, Braja D.; Hruza, Anne S.; Vock, Manfred H.; Frederick, Louis S.; and Vinals, Joaquin F., to International Flavors & Fragrances Inc. Flavoring with 1-[3-(methylthio)-butyryl]-2,6,6-trimethyl-cyclohexene and the 1,3-cyclohexadiene analog. 4,162,335, Cl. 426-535.000.
Windings, Inc.: *See*—
Wagner, William A.; and Kotzur, Frank W., 4,162,050, Cl. 242-163.000.
Windmoller & Holscher: *See*—
Achelpohl, Fritz; Tetenborg, Konrad; and Feldkamper, Richard, 4,162,025, Cl. 221-72.000.
Wine Breather, Inc.: *See*—
Bartholemew, Glen W., Jr., 4,162,129, Cl. 366-211.000.
Wingen, Peter, to Dienes Werke GmbH & Co. K.G. Heated cutting device. 4,161,898, Cl. 83-171.000.
Winters, Harold F.: *See*—
Coburn, John W.; and Winters, Harold F., 4,162,185, Cl. 156-643.000.
Wintle, Colin A.: *See*—
Salt, Kenneth J.; and Wintle, Colin A., 4,162,175, Cl. 136-233.000.
Wisconsin Centrifugal Inc.: *See*—
Naffziger, Dewein H., 4,162,156, Cl. 75-12.000.
Witter, Gerald J., to Fansteel Inc. Electrical contact material and method for making the same. 4,162,160, Cl. 75-246.000.
Wittstock, Gerhard, to Werner H.K. Peters Maschinenfabrik G.m.b.H. Machine for cutting continuous sheet material. 4,161,808, Cl. 29-33.00R.
Wittwer, Robert O.: *See*—
Mohnach, Michael G.; Harbison, William H.; and Wittwer, Robert O., 4,161,798, Cl. 15-250.130.
Witzke, Lothar; and Muller, Wolfgang, to Th. Goldschmidt AG. Process for working up nonferrous metal hydroxide sludge waste. 4,162,294, Cl. 423-24.000.
Witzke, Lothar: *See*—
Muller, Wolfgang; Witzke, Lothar; and Gottfried, Werner, 4,162,296, Cl. 423-139.000.
Wolf, Alfred P.: *See*—
Ehrenkaufer, Richard L. E.; Wolf, Alfred P.; and Hembree, Wylie C., 4,162,142, Cl. 260-326.200.
Wolf, Charles B.: *See*—
Arcella, Frank G.; Wolf, Charles B.; and Fey, Maurice G., 4,162,291, Cl. 422-198.000.
Wolf, Horst: *See*—
Hartmannsgruber, Max; Schulz, Gunter; Klein, Konrad; and Wolf, Horst, 4,161,862, Cl. 57-92.000.
Wolkstein, Herbert J.: *See*—
Mawhinney, Daniel D.; Wolkstein, Herbert J.; Rosen, Arye; and Turski, Zygmond, 4,162,412, Cl. 307-237.000.
Wood, Donald C.; and McLaughlin, Robert L., to DeSoto, Inc. Alkaline surfactant system for de-inking printed fibrous material. 4,162,186, Cl. 162-5.000.
Worley, Nathan T., to Phillips Petroleum Company. Process and apparatus for carding fibers. 4,161,805, Cl. 19-98.000.
Wright, Floyd H., to General Electric Company. Method and apparatus for electronically commutating a direct current motor without position sensors. 4,162,435, Cl. 318-138.000.
Wright, Harold: *See*—
Peace, John; Wright, Harold; and Clague, Kenneth, 4,162,471, Cl. 335-291.000.
Wyler, Leopold S., to TRE Corporation. Encoded electrical control systems. 4,162,486, Cl. 340-310.00A.
Xerox Corporation: *See*—
Conwell, Esther M., 4,162,118, Cl. 350-96.130.
Hartke, David, 4,162,541, Cl. 365-230.000.
Starkweather, Gary K.; and Urbach, John C., 4,162,121, Cl. 350-358.000.
Thornburg, David D., 4,162,538, Cl. 365-96.000.
Yafarova, Rimma L.: *See*—
Razumov, Alexandr I.; Tarasova, Raisa I.; Nikolaeva, Valentina G.; and Yafarova, Rimma L., 4,162,264, Cl. 260-558.00H.
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.
Yagi, Shizuo; Fujii, Isao; and Kogure, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Fuel injection for divided auxiliary chamber of engine. 4,161,927, Cl. 123-75.00B.
Yale, Ramon L., to GTE Sylvania Incorporated. Rare earth activated rare earth fluorogermanate. 4,162,232, Cl. 252-301.40F.
Yamshita & Associates Ltd.: *See*—
Hane, Shinichi, 4,162,041, Cl. 239-266.000.
Yanagisawa, Masahiro; and Suganuma, Yoji, to Nippon Electric Co., Ltd. Magnetic record member. 4,162,350, Cl. 428-633.000.

Yant, Kenneth B., to Dana Corporation. Free ring synchronizer having oppositely acting spring means. 4,162,001, Cl. 192-53.00E.

Yasminov, Alexandr A.: *See*—
Miropolsky, Mark U.; Maizlik, David L.; Dobrovolsky, Anatoly A.; Gerasimovich, Igor K.; Levinson, Ariel S.; Naidich, Iosif P.; Menkh, Georgy A.; and Yasminov, Alexandr A., 4,162,219, Cl. 210-108.000.

Yasui, Seimei: *See*—
Hino, Minoru; Yasui, Seimei; and Shintani, Akira, 4,162,240, Cl. 260-29.70B.

Yee, Seening: *See*—
Broder, Alan; Shapiro, Paul; and Yee, Seening, 4,162,474, Cl. 340-6.00R.

Yelland, Michael, to Imperial Chemical Industries Limited. Anthranilic acid arylester-azo-aminonaphthol sulfonic acid dyes. 4,162,249, Cl. 260-199.000.

Yockey, Francis J.: *See*—
Olander, Emil E., Jr.; James, Rex L.; Larson, Ivar W.; Covington, Wayne F.; Walden, Jack M.; Watson, Robert E.; Yockey, Francis J.; Wenninger, Fred, Jr.; and Russell, Homer C., 4,162,532, Cl. 364-710.000.

Yokoyama, Takao: *See*—
Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, 4,162,167, Cl. 106-44.000.

Yokozawa, Minori: *See*—
Kamegaya, Takeo; Yokozawa, Minori; Kaneko, Ryuichi; and Matsuzaki, Hideomi, 4,162,427, Cl. 315-169.100.

Yoshihara, Ichiro: *See*—
Abe, Takeshi; Tsuchiya, Keishin; Saito, Kazuhito; Mizuta, Toshiaki; and Yoshihara, Ichiro, 4,162,484, Cl. 340-150.000.

Yoshioka, Mitihiro: *See*—
Enomoto, Ryo; Yoshioka, Mitihiro; and Yokoyama, Takao, 4,162,167, Cl. 106-44.000.

Yoshioka, Takao: *See*—
Soma, Nobuo; Morimura, Syoji; Yoshioka, Takao; and Kurumada, Tomoyuki, 4,162,246, Cl. 260-45.8NT.

Young, David W., to Howard Hall & Company. Compositions. 4,162,155, Cl. 71-110.000.

Yount, Joseph B., III, to ICI Americas Inc. Emulsifier blend and aqueous fuel oil emulsions. 4,162,143, Cl. 44-51,000.

Yu, Chia-Nien: *See*—
Pelosi, Stanford S., Jr.; and Yu, Chia-Nien, 4,162,257, Cl. 260-347.300.

Zabler, Erich; Gassmann, Heiner; Schneider, Steffen; and Straub, Steffen, to Robert Bosch GmbH. Leveling control for motor vehicles. 4,162,083, Cl. 280-703.000.

Zackay, Victor F.: *See*—
Parker, Earl R.; Zackay, Victor F.; Bhat, Manjeshwar S.; and Garrison, Warren M., Jr., 4,162,157, Cl. 75-124.000.

Zaikonnikova, Irina V.: *See*—
Razumov, Alexandr I.; Zaikonnikova, Irina V.; Chudnovsky, Vladimir S.; Rzhevskaya, Galina F.; Tarasova, Raisa I.; Bljukherova, Nina A.; Yafarova, Rimma L.; Avrutsky, Grigory Y.; Belikov, Vladimir G.; and Litvinenko, Anatoly V., 4,162,311, Cl. 424-211.000.

Zanker, Fritz, to BASF Aktiengesellschaft. Manufacture of aliphatic or cycloaliphatic isocyanates. 4,162,263, Cl. 260-453.00P.

Zeuch, Klaus, to Siemens Aktiengesellschaft. Apparatus for preparation of a compound or an alloy. 4,162,293, Cl. 422-247.000.

Ziegler, Kurt. Locking mechanism. 4,161,871, Cl. 70-356.000.

Ziemek, Gerhard: *See*—
Scheffler, Ernst; Schatz, Friedrich; and Ziemek, Gerhard, 4,161,966, Cl. 138-112.000.

Zillgitt, Ulrich; Kuhn, Wolfgang; and Doll, Gunther, to Robert Bosch GmbH. Load trim compensating vehicle headlight deflection system. 4,162,424, Cl. 315-82.000.

Zimmermann & Jansen GmbH: *See*—
Jansen, Hermann; and Schneider, Heinz, 4,161,959, Cl. 137-340.000.

Zinser Textilmaschinen GmbH: *See*—
Hartmannsgruber, Max; Schulz, Gunter; Klein, Konrad; and Wolf, Horst, 4,161,862, Cl. 57-92.000.

Zitz, Alfred J.: *See*—
Kogler, Peter; and Zitz, Alfred J., 4,162,104, Cl. 299-75.000.

Zlotek, Thaddeus F., to Dana Corporation. Sprag for one-way clutches. 4,162,000, Cl. 192-41.00A.

Zodrow, Rudolf, to Jagenberg-Werke Aktiengesellschaft. Labeling station of a machine for labeling objects, especially bottles. 4,162,181, Cl. 156-384.000.

Zrinscak, Fred S., Sr.; and Karsner, Grant G., to Mobil Oil Corporation. Catalytic cracking of metal-contaminated oils. 4,162,213, Cl. 208-89.000.

Zuesse, Lance E. Support for maintaining head in upright position. 4,161,946, Cl. 128-75.000.

Zupancic, Boris; and Jenko, Branko, to LEK Tovarna farmacevtskih in kemicnih izdelkov, n.sol.o. Process for the preparation of 2-(3-benzoylphenyl)-propionic acid. 4,162,364, Cl. 562-408.000.

Zurfluh, Rene, to Hoffmann-La Roche Inc. Cyclopropane carboxylic acid esters. 4,162,328, Cl. 424-305.000.

Zuzak, Tomas: *See*—
Borer, Werner J.; Kugler, Tibor; and Zuzak, Tomas, 4,162,283, Cl. 264-15.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 24TH DAY OF JULY, 1979

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Lahmann, Werner K., Re. 30,051, Cl. 356-325.000.

Bundy, Gordon L., to Upjohn Company, The. PG-type, 1,9-lactones. Re. 30,053, Cl. 542-426.000.

Claycomb, Jackson R., to Schlumberger Technology Corporation. Apparatus for transmitting well bore data. Re. 30,055, Cl. 340-18.0LD.

Davies, Terrence A.; and Pedder, David J., to Square D Company. Electrical contact material and process. Re. 30,052, Cl. 75-234.000.

Hansel, William B., to Suntech, Inc. Interlock system for a gasoline dispensing nozzle. Re. 30,050, Cl. 141-207.000.

Lahmann, Werner K., to Bodenseewerk Perkin-Elmer & Co., GmbH. Chopper arrangement for atomic absorption spectrophotometer. Re. 30,051, Cl. 356-325.000.

Ong, Kian K., to U.S. Philips Corporation. Control device. Re. 30,054, Cl. 325-390.000.

Pedder, David J.: *See*—
Davies, Terrence A.; and Pedder, David J., Re. 30,052, Cl. 75-234.000.

Power Transfer Corporation: *See*—
Schutz, Ewald, Re. 30,049, Cl. 74-425.000.

Schlumberger Technology Corporation: *See*—
Claycomb, Jackson R., Re. 30,055, Cl. 340-18.0LD.

Schutz, Ewald, to Power Transfer Corporation. Power transfer. Re. 30,049, Cl. 74-425.000.

Square D Company: *See*—
Davies, Terrence A.; and Pedder, David J., Re. 30,052, Cl. 75-234.000.

Suntech, Inc.: *See*—
Hansel, William B., Re. 30,050, Cl. 141-207.000.

U.S. Philips Corporation: *See*—
Ong, Kian K., Re. 30,054, Cl. 325-390.000.

Upjohn Company, The: *See*—
Bundy, Gordon L., Re. 30,053, Cl. 542-426.000.

LIST OF PLANT PATENTEES

Conklin, H. A. Rose plant. 4,441, 7-24-79, Cl. 2.000.

Epp, Maxiemillian J., to Pan-American Plant Company. African violet named Brilliant Eva. 4,443, 7-24-79, Cl. 69.000.

Pan-American Plant Company: *See*—
Epp, Maxiemillian J., 4,443, Cl. 69.000.

Shawver, James R. Fuchsia plant. 4,442, 7-24-79, Cl. 84.000.

LIST OF DESIGN PATENTEES

Abbott Laboratories: *See*—
Pawlak, Kenneth E., 252,470, Cl. D24-54.000.

Abrams, Herbert J. Combined bank and photograph holder. 252,474, 7-24-79, Cl. D99-36.000.

Adams, John K. Boat deck. 252,455, 7-24-79, Cl. D12-70.000.

Aktiebolaget Bofors: *See*—
Korpi, Jouko K., 252,461, Cl. D15-28.000.

Allen, Johnny G. Pedestal type garbage can holder. 252,441, 7-24-79, Cl. D7-189.000.

Appelblatt, Irving; and Jackson, Theodore A., to Cadillac Gage Company. Combined armored vehicle and turret. 252,453, 7-24-79, Cl. D12-12.000.

B. W. Darrah, Inc.: *See*—
Draffone, A. Peter, 252,442, Cl. D8-71.000.

Beall, Lester, to Trend Line Furniture Corporation. Seat. 252,427, 7-24-79, Cl. D6-63.000.

Beall, Lester, Jr., to Trend Line Furniture Corporation. Table. 252,433, 7-24-79, Cl. D6-179.000.

Behnke, Edward R., to Columbus McKinnon Corporation. Chain wear inspection gauge. 252,451, 7-24-79, Cl. D10-64.000.

Bell, George R.: *See*—
Oakley, Ervin C.; Bell, George R.; and Poole, William E., 252,430, Cl. D6-167.000.

Bokor, Leslie, to Le-Bo Products Company, Inc. Combined recording tape cartridge and cassette tray. 252,423, 7-24-79, Cl. D3-35.000.

Bokor, Leslie, to Le-Bo Products Company, Inc. Recording tape cartridge tray. 252,424, 7-24-79, Cl. D3-35.000.

Bowers, Paul E.; and Dolinsky, Dennis P., to Uniroyal, Inc. Sole for a shoe. 252,420, 7-24-79, Cl. D2-320.000.

Breisford, Don A. Footstool. 252,426, 7-24-79, Cl. D6-34.000.

Breisford, Don A. Chair. 252,428, 7-24-79, Cl. D6-68.000.

Breisford, Don A. Coffee table. 252,432, 7-24-79, Cl. D6-177.000.

Broadbent, Edward G. Peripheral frame member for use in a motor vehicle. 252,471, 7-24-79, Cl. D25-74.000.

Brown, John W. Chess pieces. 252,473, 7-24-79, Cl. D21-52.000.

Cadillac Gage Company: *See*—
Appelblatt, Irving; and Jackson, Theodore A., 252,453, Cl. D12-12.000.

Cannon, John P., to Plattner Industries, Inc. Picnic jug or similar article. 252,438, 7-24-79, Cl. D7-77.000.

Carson Products Company: *See*—
Rhodes, David A., 252,445, Cl. D9-141.000.

Chrysler Corporation: *See*—
Milia, Carmelo P.; and Gray, Richard L., 252,460, Cl. D14-40.000.

Cocuzzo, Joseph G. Extensible stabilizer for attachment to a bass drum lug wing nut and drummer's stool leg or the like. 252,463, 7-24-79, Cl. D17-22.000.

Cohen, Elihu, to Trina, Inc. Foldable mirror. 252,437, 7-24-79, Cl. D6-237.000.

Columbus McKinnon Corporation: *See*—
Behnke, Edward R., 252,451, Cl. D10-64.000.

Conterno, Giovanni, to Personal S.p.A. Steering-wheel rim, for motorcars and watercraft. 252,457, 7-24-79, Cl. D12-176.000.

De Giorgis, Joseph P. Sun umbrella holder. 252,443, 7-24-79, Cl. D8-373.000.

D'Innocente, Ralph: *See*—
Jacuzzi, Roy A.; and D'Innocente, Ralph, 252,467, Cl. D23-49.000.

Dolinsky, Dennis P.: *See*—
Bowers, Paul E.; and Dolinsky, Dennis P., 252,420, Cl. D2-320.000.

Draffone, A. Peter, to B. W. Darrah, Inc. O-ring fixture. 252,442, 7-24-79, Cl. D8-71.000.

ECO Industries, Inc.: *See*—
Oakley, Ervin C.; Bell, George R.; and Poole, William E., 252,430, Cl. D6-167.000.

Elliott, Clayton A. Side support panel for pull-out drawer units. 252,436, 7-24-79, Cl. D6-191.000.

Fermahin, Andrew A. Tennis charm pendant or similar article. 252,452, 7-24-79, Cl. D11-81.000.

Gillenwater, Eugene. Holder for golf ball markers. 252,422, 7-24-79, Cl. D2-400.000.

Gray, Richard L.: *See*—
Milia, Carmelo P.; and Gray, Richard L., 252,460, Cl. D14-40.000.

Halm, Hans, to Niveau AG. Telephone index. 252,465, 7-24-79, Cl. D19-76.000.

Hamada, Masanori; Hoshino, Kunio; and Ohta, Kikuo, to Matsushita Electric Industrial Co., Ltd. Portable radio receiver. 252,425, 7-24-79, Cl. D14-70.000.

Hamilton, William P. Cooking pot top and lid organizer. 252,440, 7-24-79, Cl. D7-188.000.

Hayward, Austin L.: *See*—
Wills, Roy K., Jr.; and Hayward, Austin L., 252,419, Cl. D1-17.000.

Hoshino, Kunio: *See*—
Hamada, Masanori; Hoshino, Kunio; and Ohta, Kikuo, 252,425, Cl. D14-70.000.
International Leisure Activities, Inc: *See*—
Wills, Roy K., Jr., 252,417, Cl. D1-17.000.
International Leisure Activities, Inc.: *See*—
Wills, Roy K., Jr., 252,416, Cl. D1-17.000.
Wills, Roy K., Jr., 252,418, Cl. D1-15.000.
Wills, Roy K., Jr.; and Hayward, Austin L., 252,419, Cl. D1-17.000.
Jackson, Theodore A.: *See*—
Appelblatt, Irving; and Jackson, Theodore A., 252,453, Cl. D12-12.000.
Jacuzzi, Roy A.; and D'Innocente, Ralph, to Jacuzzi Whirlpool Bath, Inc. Combined shower stall and hydrotherapy bathtub. 252,467, 7-24-79, Cl. D23-49.000.
Jacuzzi Whirlpool Bath, Inc.: *See*—
Jacuzzi, Roy A.; and D'Innocente, Ralph, 252,467, Cl. D23-49.000.
Kimberly-Clark Corporation: *See*—
Traugott, David K., 252,446, Cl. D9-171.000.
Knoll International, Inc.: *See*—
Pfister, Murray C., 252,431, Cl. D6-177.000.
Korpi, Jouko K., to Aktiebolaget Bofors. Tooth adaptor for excavating equipment. 252,461, 7-24-79, Cl. D15-28.000.
Kupperman, Dennis: *See*—
Kupperman, Sam; and Kupperman, Dennis, 252,447, Cl. D9-193.000.
Kupperman, Sam; and Kupperman, Dennis, 252,448, Cl. D9-193.000.
Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Company. Pantograph package. 252,447, 7-24-79, Cl. D9-193.000.
Kupperman, Sam; and Kupperman, Dennis, to RB Toy Development Company. Pantograph package. 252,448, 7-24-79, Cl. D9-193.000.
Laine, Leo. Vehicular inner protective mudguard. 252,458, 7-24-79, Cl. D12-184.000.
Laine, Leo. Vehicular inner protective mudguard. 252,459, 7-24-79, Cl. D12-184.000.
Le-Bo Products Company, Inc.: *See*—
Bokor, Leslie, 252,423, Cl. D3-35.000.
Bokor, Leslie, 252,424, Cl. D3-35.000.
Mallory, Robert L.; and Mallory, Sheilah A. Cabinet for dental unit. 252,469, 7-24-79, Cl. D24-4.000.
Mallory, Sheilah A.: *See*—
Mallory, Robert L.; and Mallory, Sheilah A., 252,469, Cl. D24-4.000.
Matsushita Electric Industrial Co., Ltd.: *See*—
Hamada, Masanori; Hoshino, Kunio; and Ohta, Kikuo, 252,425, Cl. D14-70.000.
Meeter, Wayne A. Platform sole for shoes. 252,421, 7-24-79, Cl. D2-322.000.
Milia, Carmelo P.; and Gray, Richard L., to Chrysler Corporation. Control panel for a fire control combat simulator. 252,460, 7-24-79, Cl. D14-40.000.
Morin, Andre. Rack for spice containers. 252,429, 7-24-79, Cl. D6-125.000.
Nelson, Merritt J. Clock. 252,449, 7-24-79, Cl. D10-12.000.
Niveau AG: *See*—
Halm, Hans, 252,465, Cl. D19-76.000.
Oakley, Ervin C.; Bell, George R.; and Poole, William E., to ECO Industries, Inc. Gun cabinet. 252,430, 7-24-79, Cl. D6-167.000.
Ohta, Kikuo: *See*—
Hamada, Masanori; Hoshino, Kunio; and Ohta, Kikuo, 252,425, Cl. D14-70.000.
Parker Pen Company, The: *See*—
Thompson, Elmer D.; and Wacha, Martin E., 252,464, Cl. D19-55.000.
Pawlak, Kenneth E., to Abbott Laboratories. Urinary catheter adapter having a filtered air vent, or the like. 252,470, 7-24-79, Cl. D24-54.000.
Personal S.p.A.: *See*—
Conterno, Giovanni, 252,457, Cl. D12-176.000.
Pfister, Murray C., to Knoll International, Inc. Table. 252,431, 7-24-79, Cl. D6-177.000.
Phillips, Esther M. Bicycle. 252,456, 7-24-79, Cl. D12-108.000.
Plattner Industries, Inc.: *See*—
Cannon, John P., 252,438, Cl. D7-77.000.
Poole, William E.: *See*—
Oakley, Ervin C.; Bell, George R.; and Poole, William E., 252,430, Cl. D6-167.000.
Procter & Gamble Company, The: *See*—
Torongo, Albert H., Jr., 252,444, Cl. D9-116.000.
RB Toy Development Company: *See*—
Kupperman, Sam; and Kupperman, Dennis, 252,447, Cl. D9-193.000.
Kupperman, Sam; and Kupperman, Dennis, 252,448, Cl. D9-193.000.
Rhodes, David A., to Carson Products Company. Bottle. 252,445, 7-24-79, Cl. D9-141.000.
Schwebel, George A., to Susquehanna Broadcasting Co. Floating wick flicker lamp. 252,475, 7-24-79, Cl. D48-2.000.
SCM Corporation: *See*—
Tidwell, William, 252,466, Cl. D20-41.000.
Seipp, Ronald W., to Thermo King Corporation. Refrigeration unit for trucks. 252,468, 7-24-79, Cl. D23-142.000.
Smith, James A. Pail hanger. 252,439, 7-24-79, Cl. D7-187.000.
Sulek, Eugene J.; and Zierhut, Clarence D., to Texas Instruments Incorporated. Wrist watch. 252,450, 7-24-79, Cl. D10-32.000.
Susquehanna Broadcasting Co.: *See*—
Schwebel, George A., 252,475, Cl. D48-2.000.
Sussman, Howard. Multi-compartmented storage rack for sundries. 252,435, 7-24-79, Cl. D6-189.000.
Texas Instruments Incorporated: *See*—
Sulek, Eugene J.; and Zierhut, Clarence D., 252,450, Cl. D10-32.000.
Thermo King Corporation: *See*—
Seipp, Ronald W., 252,468, Cl. D23-142.000.
Thompson, Elmer D.; and Wacha, Martin E., to Parker Pen Company, The. Fountain pen nib. 252,464, 7-24-79, Cl. D19-55.000.
Tidwell, William, to SCM Corporation. Display bar for removably holding stemmed placards. 252,466, 7-24-79, Cl. D20-41.000.
Torongo, Albert H., Jr., to Procter & Gamble Company, The. Bottle. 252,444, 7-24-79, Cl. D9-116.000.
Traugott, David K., to Kimberly-Clark Corporation. Dispensing carton. 252,446, 7-24-79, Cl. D9-171.000.
Trend Line Furniture Corporation: *See*—
Beall, Lester, 252,427, Cl. D6-63.000.
Beall, Lester, Jr., 252,433, Cl. D6-179.000.
Trina, Inc.: *See*—
Cohen, Elihu, 252,437, Cl. D6-237.000.
Uniroyal, Inc.: *See*—
Bowers, Paul E.; and Dolinsky, Dennis P., 252,420, Cl. D2-320.000.
Wacha, Martin E.: *See*—
Thompson, Elmer D.; and Wacha, Martin E., 252,464, Cl. D19-55.000.
White, Malcolm, to White, Susan Beck. Roll bar safety frame for a tractor. 252,462, 7-24-79, Cl. D15-28.000.
White, Susan Beck: *See*—
White, Malcolm, 252,462, Cl. D15-28.000.
Williams, Arthur L. High performance water vehicle. 252,454, 7-24-79, Cl. D12-66.000.
Wills, Roy K., Jr., to International Leisure Activities, Inc. Candy. 252,416, 7-24-79, Cl. D1-17.000.
Wills, Roy K., Jr., to International Leisure Activities, Inc. Candy. 252,417, 7-24-79, Cl. D1-17.000.
Wills, Roy K., Jr., to International Leisure Activities, Inc. Candy. 252,418, 7-24-79, Cl. D1-15.000.
Wills, Roy K., Jr.; and Hayward, Austin L., to International Leisure Activities, Inc. Candy. 252,419, 7-24-79, Cl. D1-17.000.
Wistrand, John. Dryer. 252,472, 7-24-79, Cl. D28-13.000.
Wright, Douglas. Combined dispensing and display case. 252,434, 7-24-79, Cl. D6-189.000.
Zierhut, Clarence D.: *See*—
Sulek, Eugene J.; and Zierhut, Clarence D., 252,450, Cl. D10-32.000.

CLASSIFICATION OF PATENTS

ISSUED JULY 24, 1979

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 4

111.1	4,161,792
134	4,161,793

CLASS 5

441	4,161,794

CLASS 9

1.6	4,161,795
6 P	4,161,796
316	4,161,797

CLASS 13

1	4,162,367
18 C	4,162,368

CLASS 15

250.13	4,161,798
260	4,161,799
302	4,161,800
316 R	4,161,801
331	4,161,802

CLASS 16

18 A	4,161,803
48.5	4,161,804

CLASS 19

98	4,161,805

CLASS 24

201 A	4,161,806
263 SW	4,161,807

CLASS 29

33 R	4,161,808
157.3 D	4,161,809
427	4,161,810
429	4,161,811
446	4,161,812
460	4,161,813
580	4,161,814
623.4	4,161,815
628	4,161,816
630 B	4,161,817

CLASS 30

157	4,161,818
164.95	4,161,819
276	4,161,820

CLASS 33

41 R	4,161,821
174 R	4,161,822
179	4,161,823
180 AT	4,161,824

CLASS 34

12	4,161,825
	4,161,826

CLASS 36

11	4,161,827
32 R	4,161,828
127	4,161,829

CLASS 40

2.2	4,161,830
160	4,161,831
451	4,161,832
539	4,161,833
606	4,161,834

CLASS 42

1 A	4,161,835
16	4,161,836

CLASS 43

4	4,161,837
17	4,161,839
42.11	4,161,838
43.13	4,161,841
43.4	4,161,840
85	4,161,842
121	4,162,193
310	4,162,195

CLASS 44

51	4,162,143

CLASS 46

75	4,161,843

CLASS 47

62	4,161,844

CLASS 49

380	4,161,845

CLASS 51

33 W	4,161,846
	4,161,847
163.2	4,161,848
215 CP	4,161,849

CLASS 52

65	4,161,850
208	4,161,851
250	4,161,852
288	4,161,853
309.1	4,161,854
612	4,161,855
667	4,161,856

CLASS 53

97	4,161,857

CLASS 55

5	4,162,144
32	4,162,145
163	4,162,146
191	4,162,147
272	4,162,148
315	4,162,149
337	4,162,150

CLASS 56

7	4,161,858
364	4,161,859
370	4,161,860

CLASS 57

22	4,161,861
92	4,161,862
124	4,161,863

CLASS 58

23 R	4,161,864

CLASS 60

385	4,161,865
517	4,161,866
547 A	4,161,867

CLASS 62

24	4,162,272
256	4,161,868

CLASS 65

42	4,162,151
164	4,162,152

CLASS 70

166	4,161,869
278	4,161,870
356	4,161,871

CLASS 71

12	4,162,153
88	4,162,154
110	4,162,155

CLASS 72

95	4,161,872
324	4,161,873

CLASS 73

12	4,161,874
23	4,161,875
65	4,161,876
140	4,161,877
194 VS	4,161,878
229	4,161,879
342	4,161,880
343 R	4,161,881
368.3	4,161,882
421.5 A	4,161,883
504	4,161,884
597	4,161,885
720	4,161,887
722	4,161,886
740	4,161,888

CLASS 74

5 R	4,161,889
214	4,161,890
425	Re.30,049
548	4,161,891
552	4,161,892
813 R	4,161,893
863	4,161,894
867	4,161,895

CLASS 75

12	4,162,156
124	4,162,157
	4,162,158
130 R	4,162,159
234	Re.30,052
246	4,162,160

CLASS 81

121 A	4,161,896

CLASS 83

73	4,161,897
171	4,161,898
371	4,161,899
409	4,161,900

CLASS 84

115	4,161,901
375	4,161,902

CLASS 87

57	4,161,903

CLASS 89

7	4,161,904

CLASS 91

363 R	4,161,905
498	4,161,906

CLASS 93

51.1	4,161,907

CLASS 96

59	4,162,161
115 P	4,162,162

CLASS 99

349	4,161,908
453	4,161,909

CLASS 100

26	4,161,910
96	4,161,911

CLASS 101

99	4,161,912

CLASS 105

200	4,161,913
344	4,161,914

CLASS 106

1.13	4,162,163
21	4,162,164
	4,162,165
40 R	4,162,166
44	4,162,167
58	4,162,168
74	4,162,169
109	4,162,170
226	4,162,171

CLASS 108

144	4,161,915

CLASS 110

203	4,161,916
263	4,161,917

CLASS 112

158 E	4,161,918
275	4,161,919
	4,161,920
	4,161,921

CLASS 114

297	4,161,922

CLASS 118

658	4,161,923

CLASS 119

19	4,161,924
158	4,161,925

CLASS 123

32 EA	4,161,926
75 B	4,161,927
102	4,161,928
119 A	4,161,929
122 D	4,161,930
122 E	4,161,931
139 AW	4,161,932
	4,161,933
	4,161,934
	4,161,935
148 E	4,161,936
169 EL	4,161,937
198 F	4,161,938

CLASS 126

19 R	4,161,939
59	4,161,940
85 B	4,161,941
271	4,161,942

CLASS 128

1.3	4,161,943
75	4,161,946
142.3	4,161,947
156	4,161,948
247	4,161,949
303.14	4,161,950
340	4,161,951
654	4,161,944
696	4,161,945
786	4,161,952

CLASS 131

140 P	4,161,953
173	4,161,954

CLASS 132

9	4,161,955

CLASS 134

1	4,162,172
2	4,162,173
167 C	4,161,956

CLASS 136

89 PC	4,162,174
202	4,162,369
233	4,162,175

CLASS 137

205	4,161,957
316	4,161,958
340	4,161,959
458	4,161,960
501	4,161,961
557	4,161,962
592	4,161,963

CLASS 138

26	4,161,964
45	4,161,965
112	4,161,966
113	4,161,967
118.1	4,161,968

CLASS 139

90	4,161,969

CLASS 141

114	4,161,970
207	Re.30,050
362	4,161,971

CLASS 144

176	4,161,972
224	4,161,973
287	4,161,974

CLASS 148

1.5	4,162,176
179	4,162,177

CLASS 150

33	4,161,975

CLASS 152

239	4,161,976

CLASS 156

62.2	4,162,178
89	4,162,179
220	4,162,180
384	4,162,181
487	4,162,182
505	4,162,183
621	4,162,184
643	4,162,185

CLASS 160

381	4,161,977

CLASS 162

5	4,162,186
29	4,162,187
76	4,162,188
337	4,162,189
359	4,162,190

CLASS 164

49	4,161,978

CLASS 165

95	4,161,979
168	4,161,980

CLASS 166

261	4,161,981
269	4,161,982
	4,161,983
315	4,161,984
321	4,161,985

CLASS 172

266	4,161,986
791	4,161,987

CLASS 173

32	4,161,988
105	4,161,989
	4,161,990

CLASS 174

47	4,162,370

CLASS 176

65	4,162,191

CLASS 178

58 R	4,162,371

CLASS 179

1 C	4,162,373
1 HF	4,162,374
1 J	4,162,372
15 AT	4,162,375
18 BC	4,162,376
18 D	4,162,377
170.2	4,162,378

CLASS 180

53 FE	4,161,991
90	4,161,993
179	4,161,994
306	4,161,992

CLASS 181

150	4,161,995
230	4,161,996

CLASS 182

93	4,161,997
190	4,161,998

CLASS 188

196 BA	4,161,999

CLASS 192

41 A	4,162,000
53 E	4,162,001
99 A	4,162,002

CLASS 196

14.52	4,162,197

CLASS 200

61.88	4,162,384
153 SC	4,162,385
339	4,162,386

CLASS 203

23	4,162,198
39	4,162,199
58	4,162,200
67	4,162,201

CLASS 204

2.1	4,162,202
38 R	4,162,203
43 R	4,162,204
43 S	4,162,205
94	4,162,206
157.1 R	4,162,207
180 G	4,162,208
192 C	4,162,209
192 EC	4,162,210
195 G	4,162,211

CLASS 206

219	4,162,003
349	4,162,004
362	4,162,005
389	4,162,009
444	4,162,006
	4,162,007
590	4,162,008
823	4,162,010

CLASS 208

79	4,162,212
89	4,162,213

CLASS 209

637	4,162,011
662	4,162,012

CLASS 210

21	4,162,215
73 R	4,162,216
84	4,162,217
104	4,162,218
108	4,162,219
448	4,162,220

CLASS 211

43	4,162,013
50	4,162,014
87	4,162,015

CLASS 219

10.55 B	4,162,381
10.55 F	4,162,380
64	4,162,382
68	4,162,383
79	4,162,387
96	4,162,388
121 EB	4,162,391
121 LM	4,162,390
121 P	4,162,389
146.51	4,162,392
217	4,162,393
341	4,162,394
367	4,162,395
497	4,162,379

CLASS 220

1 B	4,162,020
202	4,162,021
224	4,162,022
258	4,162,023
350	4,162,024

CLASS 221

72	4,162,025
92	4,162,026

CLASS 222

23	4,162,027
129.4	4,162,028
131	4,162,029
321	4,162,030

CLASS 224

45 K	4,162,031

CLASS 226

81	4,162,032

CLASS 227

10	4,162,033

CLASS 228

37	4,162,034

CLASS 235

304	4,162,396
456	4,162,035

CLASS 236

47	4,162,036

CLASS 239

206	4,162,038
214.25	4,162,039
265.33	4,162,040
266	4,162,041
332	4,162,037
526	4,162,042
533.3	4,162,043

CLASS 241

16 4,162,044
4,162,045
46.17 4,162,046

CLASS 242

68.5 4,162,047
84.2 G 4,162,048
84.5 R 4,162,049
163 4,162,050
201 4,162,051

CLASS 244

3.16 4,162,052
3.27 4,162,053

CLASS 248

94 4,162,054
441 R 4,162,055
495 4,162,056

CLASS 250

199 4,162,397
205 4,162,398
231 SE 4,162,399
256 4,162,400
311 4,162,401
332 4,162,402
396 ML 4,162,403
423 R 4,162,404
461 B 4,162,405
468 4,162,406
4,162,407
555 4,162,408

CLASS 251

168 4,162,057
326 4,162,058

CLASS 252

1 4,162,221
32.7 E 4,162,222
33.2 4,162,223
49.6 4,162,224
50 4,162,225
62.1 P 4,162,226
63.5 4,162,227
90 4,162,228
301.1 W 4,162,229
4,162,230
4,162,231
301.4 F 4,162,232
429 R 4,162,233
432 4,162,234
462 4,162,235
558 4,162,236

CLASS 254

187.4 4,162,059

CLASS 260

17 R 4,162,237
29.6 S 4,162,238
29.7 B 4,162,240
29.7 UP 4,162,239
30.8 R 4,162,241
4,162,242
37 EP 4,162,244
37 SB 4,162,243
40 R 4,162,245
45.8 NT 4,162,246
45.9 NC 4,162,247
112.5 S 4,162,248
199 4,162,249
239 A 4,162,250
239.1 4,162,251
306.7 T 4,162,253
307 D 4,162,254
326.2 4,162,142
340.5 R 4,162,255
345.2 4,162,256
347.3 4,162,257
348.11 4,162,258
397.1 4,162,259
424 4,162,260
449 L 4,162,261
449 R 4,162,262
453 P 4,162,263
558 H 4,162,264
578 4,162,265
586 F 4,162,266
586 P 4,162,267
592 4,162,268
600 R 4,162,269
607 AR 4,162,270
943 4,162,279
968 4,162,280

CLASS 261

30 4,162,281

CLASS 264

9 4,162,282
15 4,162,283
66 4,162,284
4,162,285
75 4,162,288
117 4,162,286
4,162,287

CLASS 266

49 4,162,060
193 4,162,061

CLASS 267

8 R 4,162,062
73 4,162,063
177 4,162,064

CLASS 269

294 4,162,065

CLASS 270

54 4,162,066

CLASS 271

177 4,162,067

CLASS 273

1 E 4,162,068
1 R 4,162,069
29 A 4,162,070
33 4,162,071
96 R 4,162,072
144 B 4,162,073
175 4,162,074
256 4,162,075

CLASS 274

23 R 4,162,076

CLASS 277

53 4,162,077
102 4,162,078
205 4,162,079

CLASS 279

1 DC 4,162,080

CLASS 280

11.37 H 4,162,081
81 A 4,162,082
229 4,162,084
412 4,162,085
425 R 4,162,086
460 A 4,162,087
606 4,162,088
618 4,162,089
688 4,162,090
702 4,162,091
703 4,162,083

CLASS 285

39 4,162,092
47 4,162,093

CLASS 290

53 4,162,409
55 4,162,410

CLASS 292

288 4,162,094

CLASS 294

74 4,162,095

CLASS 296

39 R 4,162,098
63 4,162,099
100 4,162,100
190 4,162,097
196 4,162,096

CLASS 297

6 4,162,101

CLASS 299

10 4,162,102
43 4,162,103
75 4,162,104

CLASS 301

12 R 4,162,105

CLASS 303

3 4,162,107
115 4,162,108

CLASS 307

221 D 4,162,411
237 4,162,412
253 4,162,413
362 4,162,416

CLASS 308

216 4,162,109
234 4,162,110

CLASS 310

21 4,162,417
49 R 4,162,418
68 R 4,162,414
266 4,162,419
313 4,162,415
326 4,162,111

CLASS 312

15 4,162,112
199 4,162,113
330 R 4,162,114

CLASS 313

60 4,162,420
403 4,162,421
496 4,162,422

CLASS 315

5.41 4,162,423
82 4,162,424
150 4,162,425
151 4,162,426
169.1 4,162,427
284 4,162,428
4,162,429
309 4,162,430
346 4,162,431
349 4,162,432
411 4,162,433
4,162,434

CLASS 316

4 4,162,115

CLASS 318

138 4,162,435
139 4,162,436
410 4,162,437
564 4,162,438

CLASS 320

40 4,162,439

CLASS 323

22 SC 4,162,440
57 4,162,441
106 4,162,442

CLASS 324

78 D 4,162,443
103 P 4,162,444
175 4,162,445

CLASS 325

15 4,162,446
18 4,162,447
37 4,162,448
55 4,162,449
373 4,162,452
390 Re.30,054
419 4,162,450
451 4,162,451

CLASS 328

111 4,162,453
147 4,162,454

CLASS 330

10 4,162,455
69 4,162,456
295 4,162,457

CLASS 331

56 4,162,458
90 4,162,459
94.5 H 4,162,460

CLASS 333

14 4,162,462
117 4,162,463
138 4,162,464
151 4,162,465
174 4,162,461
194 4,162,466

CLASS 335

16 4,162,467
106 4,162,468
186 4,162,469
210 4,162,470
291 4,162,471

CLASS 338

116 4,162,472

CLASS 339

60 M 4,162,116

CLASS 340

1 L 4,162,473
6 R 4,162,474
8 R 4,162,475
10 4,162,476
18 LD Re.30,055
32 4,162,477
52 F 4,162,478
63 4,162,479
146.1 AL 4,162,480
146.3 AG 4,162,481
146.3 H 4,162,482
147 R 4,162,483
150 4,162,484
289 4,162,485
310 A 4,162,486
505 4,162,488
518 4,162,489
603 4,162,490
646 4,162,491
723 4,162,492
744 4,162,487
752 4,162,493

CLASS 343

5 EM 4,162,494
7.3 4,162,495
18 A 4,162,496
100 LE 4,162,497
700 MS 4,162,499
772 4,162,500

CLASS 346

140 R 4,162,501
4,162,502
163 4,162,503

CLASS 350

4.2 4,162,117
96.13 4,162,118
96.21 4,162,119
253 4,162,120
358 4,162,121

CLASS 351

161 4,162,122

CLASS 354

25 4,162,123
155 4,162,498

CLASS 356

4 4,162,124
28 4,162,509
30 4,162,125
237 4,162,126
325 Re.30,051

CLASS 357

23 4,162,504
30 4,162,505
59 4,162,506
68 4,162,507

CLASS 358

18 4,162,508
128 4,162,510
4,162,511
139 4,162,512
191 4,162,513

CLASS 361

2 4,162,514
232 4,162,515
358 4,162,517
372 4,162,516
433 4,162,518

CLASS 362

113 4,162,521

CLASS 363

43 4,162,523
56 4,162,524
71 4,162,525
171 4,162,522

CLASS 364

200 4,162,519
4,162,520
4,162,526
4,162,529
464 4,162,530
474 4,162,527
563 4,162,528
571 4,162,531
710 4,162,532
728 4,162,533
900 4,162,534
4,162,535
4,162,536

CLASS 365

19 4,162,537
96 4,162,538
149 4,162,539
194 4,162,540
230 4,162,541

CLASS 366

149 4,162,127
154 4,162,128
211 4,162,129

CLASS 400

4 4,162,130
124 4,162,131

CLASS 403

361 4,162,132

CLASS 405

258 4,162,133

CLASS 406

185 4,162,106

CLASS 408

46 4,162,134

CLASS 414

85 4,162,016
313 4,162,017
412 4,162,019
780 4,162,135
786 4,162,018

CLASS 416

97 R 4,162,136

CLASS 417

405 4,162,137

CLASS 422

170 4,162,289
190 4,162,290
198 4,162,291
206 4,162,292
247 4,162,293

CLASS 423

24 4,162,294
61 4,162,295
139 4,162,296
158 4,162,297
230 4,162,298
242 4,162,299
314 4,162,300
440 4,162,301
579 4,162,302

CLASS 424

9 4,162,303
117 4,162,304
120 4,162,305
125 4,162,306
177 4,162,307
195 4,162,308
4,162,309
200 4,162,310
211 4,162,311
4,162,312
217 4,162,313
246 4,162,314
250 4,162,315
4,162,316
4,162,317
4,162,318
4,162,319
251 4,162,320
266 4,162,321
267 4,162,322
274 4,162,323
4,162,324
4,162,325
283 4,162,326
285 4,162,327
305 4,162,328
319 4,162,329
322 4,162,330
324 4,162,331

CLASS 425

125 4,162,138
174.8 E 4,162,139

CLASS 426

249 4,162,332
283 4,162,333
505 4,162,334
535 4,162,335
623 4,162,336

CLASS 427

92 4,162,337
249 4,162,338

CLASS 428

43 4,162,339
83 4,162,340
117 4,162,341
159 4,162,342
212 4,162,343
4,162,344
328 4,162,345
364 4,162,346
411 4,162,347
474 4,162,348
614 4,162,349
633 4,162,350

CLASS 429

15 4,162,351
29 4,162,352

CLASS 431

284 4,162,140

CLASS 432

144 4,162,141

CLASS 435

15 4,162,194
239 4,162,192
313 4,162,196

CLASS 521

107 4,162,353

CLASS 525

2 4,162,276
4,162,278
3 4,162,354
146 4,162,277
428 4,162,275

CLASS 526

293 4,162,355

CLASS 528

31 4,162,356
67 4,162,357
75 4,162,274
120 4,162,358

CLASS 536

70 4,162,359

CLASS 542

426 Re.30,053

CLASS 544

16 4,162,360

CLASS 546

72 4,162,361
201 4,162,252

CLASS 560

25 4,162,362
246 4,162,363

CLASS 562

408 4,162,364
416 4,162,365

CLASS 568

637 4,162,366

CLASS 585

274 4,162,271
471 4,162,214
854 4,162,273

D1—	15	252,418		63	252,427		237	252,437		193	252,447		176	252,457	D20—	41	252,466
	17	252,416		68	252,428	D7—	77	252,438			252,448		184	252,458	D21—	52	252,473
		252,417		125	252,429		187	252,439	D10—	12	252,449			252,459	D23—	49	252,467
		252,419		167	252,430		188	252,440		32	252,450	D14—	40	252,460		142	252,468
D2—	320	252,420		177	252,431		189	252,441		64	252,451		70	252,425	D24—	4	252,469
	322	252,421			252,432	D8—	71	252,442	D11—	81	252,452	D15—	28	252,461		54	252,470
	400	252,422		179	252,433		373	252,443	D12—	12	252,453			252,462	D25—	74	252,471
D3—	35	252,423		189	252,434	D9—	116	252,444		66	252,454	D17—	22	252,463	D28—	13	252,472
		252,424			252,435		141	252,445		70	252,455	D19—	55	252,464	D48—	2	252,475
D6—	34	252,426		191	252,436		171	252,446		108	252,456		76	252,465	D99—	36	252,474

CLASSIFICATION OF PLANTS

P.—	2	4,441		69	4,443		84	4,442									

GEOGRAPHICAL INDEX
OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama	1	Kentucky	21	Oregon	41
Alaska	2	Louisiana	22	Pennsylvania	42
American Samoa	3	Maine	23	Puerto Rico	43
Arizona	4	Maryland	24	Rhode Island	44
Arkansas	5	Massachusetts	25	South Carolina	45
California	6	Michigan	26	South Dakota	46
Canal Zone	7	Minnesota	27	Tennessee	47
Colorado	8	Mississippi	28	Texas	48
Connecticut	9	Missouri	29	Utah	49
Delaware	10	Montana	30	Vermont	50
District of Columbia	11	Nebraska	31	Virginia	51
Florida	12	Nevada	32	Virgin Islands	52
Georgia	13	New Hampshire	33	Washington	53
Guam	14	New Jersey	34	West Virginia	54
Hawaii	15	New Mexico	35	Wisconsin	55
Idaho	16	New York	36	Wyoming	56
Illinois	17	North Carolina	37	U.S. Air Force	57
Indiana	18	North Dakota	38	U.S. Army	58
Iowa	19	Ohio	39	U.S. Navy	59
Kansas	20	Oklahoma	40		

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

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01 : 4,162,336
04 : 4,162,028
4,162,075
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06 : Re.30,052
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4,162,157
4,162,171
4,162,194
4,162,212
4,162,242
4,162,250
4,162,326
4,162,339
4,162,373
4,162,384
4,162,445
4,162,449
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4,162,486
4,162,501
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08 : 4,161,923
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09 : 4,161,796
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4,162,077
4,162,115
4,162,276
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4,162,172
4,162,238
4,162,341
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4,161,821
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4,162,160
4,162,182
4,162,199
4,162,230
4,162,231
4,162,351
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4,162,401
4,162,457
4,162,465
4,162,466
4,162,469
18 : 4,161,798
4,161,812
4,161,845
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4,162,408
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4,161,900
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4,162,517
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24 : 4,161,876
4,162,122
4,162,124
4,162,169
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4,162,352
4,162,441
4,162,492
4,162,500
4,162,522
4,162,533
25 : 4,161,813
4,161,815
4,161,822
4,161,826
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4,162,174
4,162,202
4,162,227
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4,162,463
4,162,485
4,162,527
26 : Re.30,053
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4,161,889
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4,162,168
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4,162,410
4,162,419
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4,162,482
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4,162,006
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4,162,381
4,162,425
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4,162,535
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4,162,536
34 : 4,161,869
4,161,878
4,161,907
4,161,918
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4,162,008
4,162,010
4,162,013
4,162,023
4,162,030
4,162,130
4,162,151
4,162,152
4,162,163
4,162,191
4,162,193
4,162,213
4,162,220
4,162,225
4,162,233
4,162,241
4,162,256
4,162,278
4,162,312
4,162,313
4,162,317
4,162,323
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4,162,337
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4,162,377
4,162,412
4,162,488
4,162,495
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4,162,510
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4,162,282
4,162,289
36 : 4,161,806
4,161,814
4,161,817
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4,161,833
4,161,853
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4,161,922
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4,161,975
4,162,026
4,162,036
4,162,040
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4,162,118
4,162,133
4,162,142
4,162,146
4,162,158
4,162,164
4,162,173
4,162,216
4,162,224
4,162,226
4,162,257
4,162,279
4,162,295
4,162,301
4,162,332
4,162,334
4,162,343
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4,162,361
4,162,366
4,162,390
4,162,392
4,162,474
4,162,483
4,162,497
4,162,526
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4,162,084
4,162,342
4,162,386
39 : 4,161,792
4,162,537

4,161,824
4,161,831
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4,161,928
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4,162,001
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4,162,156
4,162,165
4,162,179
4,162,187
4,162,205
4,162,234
4,162,265
4,162,271
4,162,277
4,162,380
40 : 4,161,997
4,162,004
4,162,015
4,162,140
4,162,145
4,162,223
4,162,272
4,162,273
4,162,286
4,162,287
4,162,347
4,162,363
4,162,496
41 : 4,161,902
4,162,033
4,162,059
4,162,196
42 : Re.30,049
Re.30,050
4,161,825
4,161,855
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4,162,056
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4,162,222
4,162,232
4,162,248
4,162,291
4,162,302
4,162,362
4,162,385
4,162,404
4,162,405
4,162,416
4,162,421
4,162,428
4,162,429
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4,162,434
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4,162,494
44 : 4,162,534
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4,162,370
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47 : 4,161,818
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4,161,901
4,162,150
4,162,204
4,162,254
4,162,298
48 : Re.30,055
4,161,793
4,161,807
4,161,820
4,161,846
4,161,847
4,161,942
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4,161,981
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4,161,985
4,162,027
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4,162,201
4,162,244
4,162,290
4,162,358
4,162,400
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4,162,521
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4,162,016
4,162,088
4,162,206
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4,162,261
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4,162,353
4,162,479
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4,162,068
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252,467
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252,443
252,446
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13 : 252,441
15 : 252,452
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252,442
252,447
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252,473
20 : 252,438
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27 : 252,453
252,468
32 : 252,469
34 : 252,436
252,445
252,463
36 : 252,423
252,424
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252,456
252,466
37 : 252,427
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252,417
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252,419
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252,475
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